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SIERRA CLUB BULLETIN

VOLUME XI

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NUMBER 1

SAN FRANCISCO
JANUARY
1920

Smithsonian Institution
APR 6 1920
National Museum

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IN THE REDWOOD FOREST
Photo by Herbert W. Gleason

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SAVE THE REDWOODS*

By John Muir

NOTE: In his intimate acquaintance with nature John Muir recognized and loved everything that was natural and honest, but his interest focused upon the things which represented the most splendid expressions of creative power. Not only did he instinctively select for close personal companionship the elements of nature that had most to give for him, but, as no other western naturalist has done, he set forth their fullest meaning in the language of the people.

Of all Muir's special interests in nature, it is probable that none made to him a stronger appeal than the giant Sequoias of the Sierra and Coast Range forests. It was his firm conviction that they represented the supremest examples of majesty among all living things, and his journey around the earth to compare the Big Trees with the trees of the world left him with settled conviction regarding the correctness of this view. For many years he gave himself to the protection of these "Kings of the forest, the noblest of a noble race." At this time of national movement for the preservation of these forests through the Save-the-Redwoods League, it is particularly fitting that we present the sentiments written years ago, in support of just such a movement, by the friend who fought so hard, so faithfully, and so long in this good cause.—John Campbell Merriam, *Chairman, Executive Committee of the Save-the-Redwoods League.*

◆

WE are often told that the world is going from bad to worse, sacrificing everything to mammon. But this righteous uprising in defense of God's trees in the midst of exciting politics and wars is telling a different story, and every Sequoia,

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*Found among Muir's papers after his death and now published for the first time. See editorial, page 87.—Editors.

I fancy, has heard the good news and is waving its branches for joy. The wrongs done to trees, wrongs of every sort, are done in the darkness of ignorance and unbelief, for when light comes the heart of the people is always right. Forty-seven years ago one of these Calaveras King Sequoias was laboriously cut down, that the stump might be had for a dancing-floor. Another, one of the finest in the grove, more than three hundred feet high, was skinned alive to a height of one hundred and sixteen feet from the ground and the bark sent to London to show how fine and big that Calaveras tree was—as sensible a scheme as skinning our great men would be to prove their greatness. This grand tree is of course dead, a ghastly disfigured ruin, but it still stands erect and holds forth its majestic arms as if alive and saying, "Forgive them; they know not what they do." Now some millmen want to cut all the Calaveras trees into lumber and money. But we have found a better use for them. No doubt these trees would make good lumber after passing through a sawmill, as George Washington after passing through the hands of a French cook would have made good food. But both for Washington and the tree that bears his name higher uses have been found.

Could one of these Sequoia kings come to town in all its godlike majesty so as to be strikingly seen and allowed to plead its own cause, there would never again be any lack of defenders. And the same may be said of all the other Sequoia groves and forests of the Sierra with their companions and the noble *Sequoia sempervirens,* or redwood, of the coast mountains.

In a general view we find that the *Sequoia gigantea,* or Big Tree, is distributed in a widely interrupted belt along the west flank of the Sierra, from a small grove on the middle fork of the American River to the head of Deer Creek, a distance of about two hundred and sixty miles, at an elevation of about five thousand to a little over eight thousand feet above the sea. From the American River grove to the forest on Kings River the species occurs only in comparatively small isolated patches or groves so sparsely distributed along the belt that three of the gaps in it are from forty to sixty miles wide. From Kings River southward the Sequoia is not restricted to mere groves, but extends across the broad rugged basins of the Kaweah and Tule rivers in majestic forests a distance of nearly seventy miles, the continuity of this portion of the belt being but slightly broken save by the deep cañons.

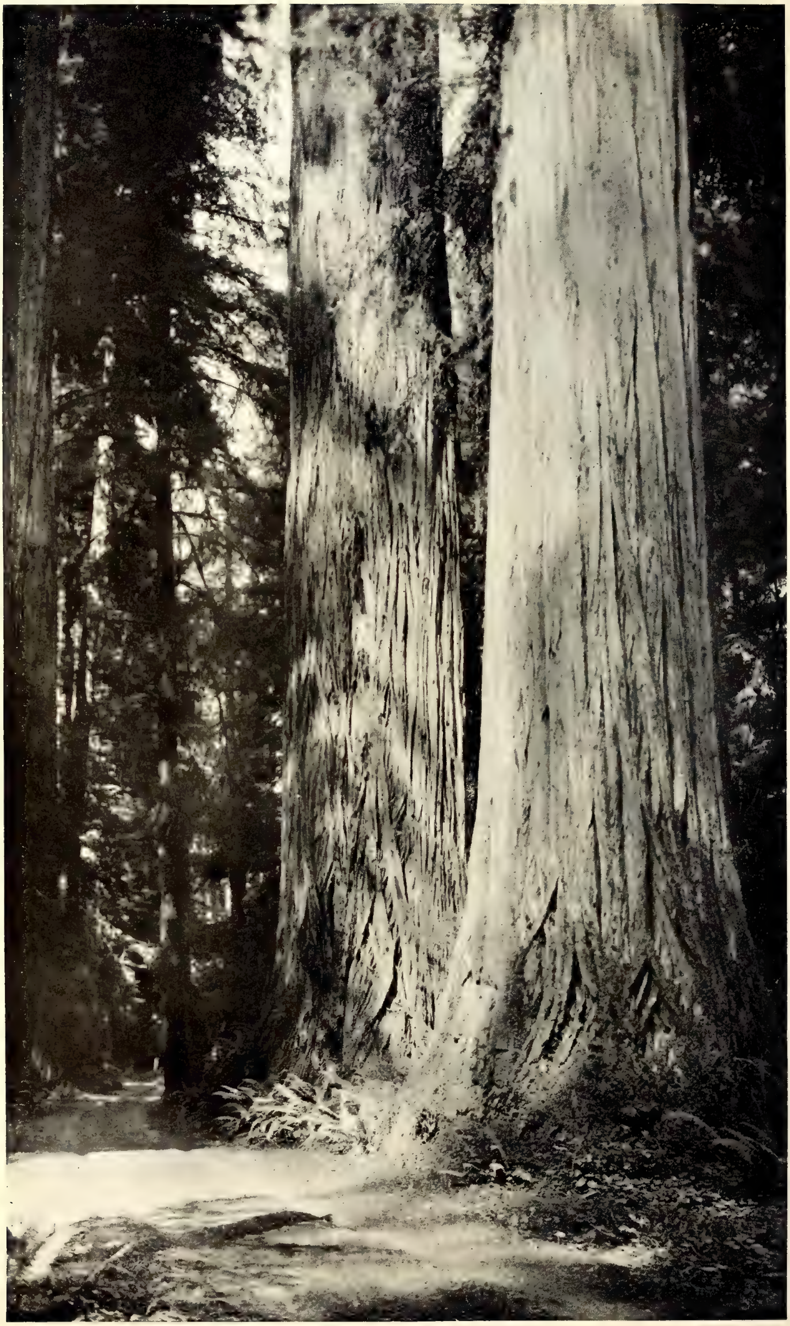
In these noble groves and forests to the southward of the Calaveras Grove the axe and saw have long been busy, and thousands of the finest Sequoias have been felled, blasted into manageable dimensions, and sawed into lumber by methods destructive almost beyond belief, while fires have spread still wider and more lamentable ruin. In the course of my explorations twenty-five years ago, I found five sawmills located on or near the lower margin of the Sequoia belt, all of which were cutting more or less Big Tree lumber, which looks like the redwood of the coast, and was sold as redwood. One of the smallest of these mills in the season of 1874 sawed two million feet of Sequoia lumber. Since that time other mills have been built among the Sequoias, notably the large ones on Kings River and the head of the Fresno. The destruction of these grand trees is still going on.

On the other hand, the Calaveras Grove for forty years has been faithfully protected by Mr. Sperry, and with the exception of the two trees mentioned above is still in primeval beauty. The Tuolumne and Merced groves near Yosemite, the Dinky Creek grove, those of the General Grant National Park and the Sequoia National Park, with several outstanding groves that are nameless on the Kings, Kaweah, and Tule river basins, and included in the Sierra forest reservation, have of late years been partially protected by the Federal Government; while the well-known Mariposa Grove has long been guarded by the State.

For the thousands of acres of Sequoia forest outside of the reservation and national parks, and in the hands of lumbermen, no help is in sight. Probably more than three times as many Sequoias as are contained in the whole Calaveras Grove have been cut into lumber every year for the last twenty-six years without let or hindrance, and with scarce a word of protest on the part of the public, while at the first whisper of the bonding of the Calaveras Grove to lumbermen most everybody rose in alarm. This righteous and lively indignation on the part of Californians after the long period of deathlike apathy, in which they have witnessed the destruction of other groves unmoved, seems strange until the rapid growth that right public opinion has made during the last few years is considered and the peculiar interest that attaches to the Calaveras giants. They were the first discovered and are best known. Thousands of travelers from every country have come to pay them tribute of admiration and praise, their reputation is world-wide, and the names of great men have long been associated with them—Washington, Humboldt, Torrey and Gray, Sir Joseph Hooker, and others. These kings of the forest, the noblest of a noble race, rightly belong to the world, but as they are in California we cannot escape responsibility as their guardians. Fortunately the American people are equal to this trust, or any other that may arise, as soon as they see it and understand it.

Any fool can destroy trees. They cannot defend themselves or run away. And few destroyers of trees ever plant any; nor can planting avail much toward restoring our grand aboriginal giants. It took more than three thousand years to make some of the oldest of the Sequoias, trees that are still standing in perfect strength and beauty, waving and singing in the mighty forests of the Sierra. Through all the eventful centuries since Christ's time, and long before that, God has cared for these trees, saved them from drought, disease, avalanches, and a thousand storms; but he cannot save them from sawmills and fools; this is left to the American people. The news from Washington is encouraging. On March third [1905?] the House passed a bill providing for the Government acquisition of the Calaveras giants. The danger these Sequoias have been in will do good far beyond the boundaries of the Calaveras Grove, in saving other groves and forests, and quickening interest in forest affairs in general. While the iron of public sentiment is hot let us strike hard. In particular, a reservation or national park of the only other species of Sequoia, the *sempervirens,* or redwood, hardly less wonderful than the *gigantea,* should be quickly secured. It will have to be acquired by gift or purchase, for the Government has sold every section of the entire redwood belt from the Oregon boundary to below Santa Cruz.

MARGIN OF THE REDWOOD FOREST
Photo by U. S. Forest Service



ONCE GONE, NOT TO BE RESTORED IN OUR TIME
Photo by California State Forester

PROGRESS IN THE NATIONAL PARKS

By Stephen T. Mather, Director of National Parks

THE Sierra Club has been so closely identified with the national park development that I am particularly glad to avail myself of the opportunity to present to its members an account of the past year's progress and a survey of some of the more pressing problems that confront us. In doing so I shall confine myself to matters that involve the National Park Service as a whole and those parks that lie nearest to the membership of the club. A more complete discussion of these matters, as well as those concerning the other parks and national monuments, will be found in the annual report of the Director of the National Park Service for the year 1919.

The past season was remarkable for the large increase in travel to the national parks. The total number of visitors to all parks during the past three years was as follows:

1917—Previous record year . . .	488,268
1918—Decrease due to war conditions .	451,691
1919—	756,027

This sudden increase taxed the accommodations and the administrative capacities to the utmost. Every effort was made by the National Park Service to meet the varied demands, but in some instances the facilities at its disposal were entirely inadequate. The result of last year's travel shows very clearly the pressing need for larger appropriations to provide such imperative necessities as new roads, improved roads, trails, bridges, public camping facilities, water supply and sewerage systems, and the expansion of supervision and service.

Although the travel was varied in character and an astonishing increase appeared in every mode, the most remarkable increase was in the number of private automobiles entering the parks. In 1917 and 1918 there were approximately fifty-five thousand cars a year, whereas in 1919 there were over one hundred thousand. The influence of this travel is already being felt in the growing demand for a park-to-park highway system. It is to be hoped that this demand will result in securing the co-operation of local, state, and national agencies in a comprehensive broad-guage extension and paving program.

One obvious lesson from the past season is that the more remote sections of the parks must be rendered accessible by trails and public camps. This is illustrated particularly in Yosemite, where some outlet must be found for the ever-increasing throngs in the valley. It is the aim of the National Park Service to assist in every way the campers who bring their own equipment and the travelers who desire modest accommodations away from the general centers.

Three new national parks were established during 1919. The Grand Cañon of the Colorado, in Arizona, which has been a national monument since 1908, administered by the Department of Agriculture, has at last been made a national park. The bill was signed by the President on February 26, 1919. It is proposed to hold dedication ceremonies early this spring. On the same day a bill was signed creating the Lafayette National Park on Mount Desert Island, in the State of Maine. This is our first national park east of the Mississippi. Since 1916 it has been administered as the Sieur de Monts National Monument. The third new park is Zion National Park, in Utah, embracing the wonderful Zion Cañon, which has been a national monument since 1909. The creation of these three parks constitutes an important step in the rounding out of a comprehensive park system adequate for the recreational and educational needs of the nation.

Other steps are in contemplation. Of the many suggestions for additions to the system, certain ones stand out as pre-eminently desirable. Foremost is the proposed Roosevelt National Park in California. The Phelan bill, designed to create this park, was passed by the Senate a year ago, but its counterpart in the House of Representatives, the Elston bill, was held in committee, so that the matter died with the expiring Congress. New bills following the same lines have been introduced in both houses during the current session, and, with the continued support of such public-spirited organizations as the Sierra

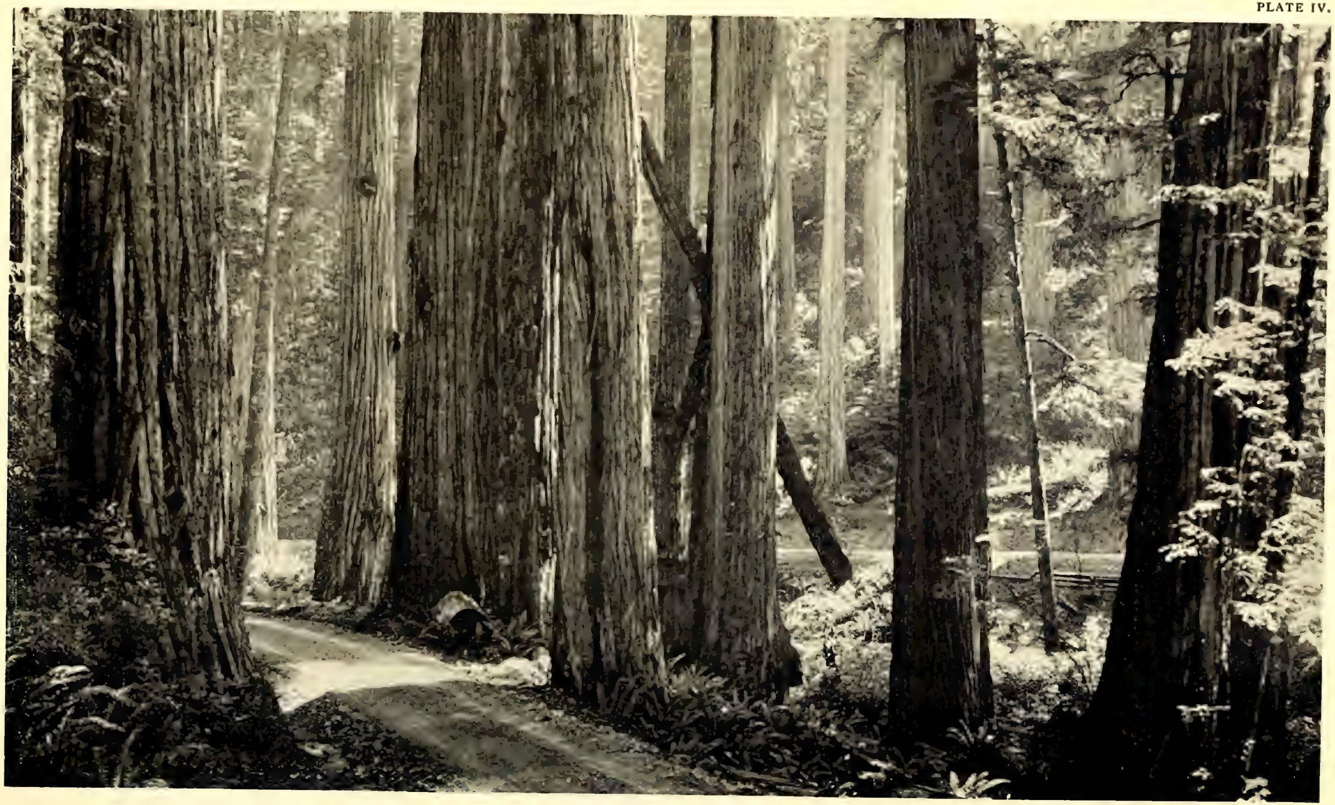
Club, the present year should see a successful fruition of the project to include the regions of the Kern and Kings River cañons in a great national park. Another project of almost equal importance is the extension of the Yellowstone National Park to include the Jackson Hole country and the Teton Mountains. The boundaries of Crater Lake, Mount Rainier, and Rocky Mountain national parks also need extension, in order to meet more fully the needs of the public. The Sierra Club should be particularly interested in solving the problem as to what should be done to preserve some typical tracts of the California coast redwoods from the very rapid destruction that is now going on. A resolution has been introduced in Congress asking for an investigation to determine whether some such tract should be set aside as a national park.

The year's activities in Yosemite National Park, while greater than ever before, must be considered as but indications of those to come. Thronged with thousands of happy vacationists from late spring to the end of the summer season, Yosemite has attained a new record of usefulness in the life of the nation. Vastly more people toured the park this year than ever before, and it is especially worthy of note that the upper reaches of this great scenic playground were more popular with visitors this year than during any past season. This broader understanding and appreciation of the park became general even faster than we had dared to hope, so that funds must be provided immediately by the Federal Government for extensive development of roads and trails and sanitation systems, while the enterprises engaged in furnishing accommodations of various kinds must enlarge their establishments and better prepare to meet the ever-increasing demand for every type of service.

I had the pleasure of visiting the Sierra Club members during their outing at Tuolumne Soda Springs last summer and renewed my realization of the good that these outings are doing, not only on account of the enjoyment of the members, but in spreading far and wide information about the wonders of the high mountain regions of the parks. I camped for several days in the Tuolumne Meadows with members of my family, and passed that way again a little later with a group of friends, who were one and all impressed with the ideal character of this region for summer camping.

The problem of developing the hotel accommodations in Yosemite has long been a perplexing one. It has been beset with innumerable difficulties perhaps not always comprehended by the casual visitor. At length the situation seems to have been met upon the broad scale that alone can solve the problem. The Yosemite National Park Company, composed of far-seeing business men of San Francisco and Los Angeles, are preparing to go ahead with improvements involving an aggregate expenditure of $1,500,000. This includes the construction of the new hotel on the floor of Yosemite Valley, the building of a new Camp Yosemite, installation of sanitary and water-supply systems at Glacier Point Hotel, and in general complete provision for all conditions of travel. At Camp Curry, operated by the Curry Camping Company, a group of very attractive bungalows has been completed and other steps are being taken to meet the demands of its ever-increasing patronage.

Yosemite is a winter as well as a summer resort. That it has not been more patronized during the winter months is due partly to limited accommodations and partly to lack of publicity. The plans for the new hotel give due consideration to its use as a winter resort, and there is every reason to suppose that in the future the fame of Yosemite in its garb of snow and ice will spread throughout the world. Contemporaneously with the building of the hotel there will be under construction by the State of California a new highway from Merced by way of Mariposa and the cañon of the Merced River, connecting at El Portal with the existing road into the valley. When this road is paved out of a fund already started by public subscription there will be a splendid highway with uniform grade open all the year round. In anticipation of this, the Park Service has already regraded and widened its road from the valley to the boundary of the park near El Portal and is asking Congress this year for an appropriation for paving. Another important step in the development of Yosemite as a winter resort has been suggested by Mr. William E. Colby of the Sierra Club in the form of a shaft inside of the cliff extending from the floor of the valley to Glacier Point. This is apparently an entirely prac-



A FAMILY GROUP OF REDWOODS
Photo by California State Forester

MOUNT RAINIER IN WINTER
Photo by Rodney L. Glisan

tical scheme, and if put into effect will make it possible to keep open the Glacier Point Hotel all the year round and give incomparable opportunities for snow sports.

Of special interest to the Sierra Club is the trail development throughout the parks. I have been greatly aided by the valuable suggestions of members of the club in planning trail routes. Anticipating a much greater use of the trails each season, we began this year the development of the Grand Cañon of the Tuolumne River. A trail is now being built from Harden Lake to Pate Valley, and it is proposed to continue this next year, if funds are available, up Piute Creek to join the Pleasant Valley Trail on the north side of the cañon. Also it is proposed to continue to Pate Valley the trail which now reaches the Waterwheel Falls from Tuolumne Meadows.

Fishing is one of the attractions of Yosemite National Park, and a greater number enjoyed this sport last season than ever before. Foreseeing the need of planting young fish in order to provide for the continuance of this sport, and for the purpose of propagating fish for the general use of the State, an agreement was entered into between the National Park Service and the State of California for the construction of a fish hatchery at Happy Isles, at an expenditure of about $17,000. Water was to be furnished from the intake of the old power plant, and all plans had been completed by the State Architect and the State Fish and Game Commission, when the matter was held up by the State Board of Control and the Governor. A temporary hatchery was in operation last summer and met with marked success; but even that has now been dismantled by orders of the Governor, and the entire plan has been subjected to a delay that will for the present curtail the sport of fishing in the park.

A very useful contribution to the park was made this year by the donation, through the Sierra Club, of a protection for the trail to the top of Half Dome. This was installed early in July and was used by many climbers, who appreciated the opportunity of seeing in safety the wonderful view, with its sheer drop of practically five thousand feet to the valley below.

A notable event in the educational use of the parks was the series of Le Conte Memorial Lectures delivered in Yosemite

Valley last summer under the direction of the Extension Division of the University of California. Four series were given —by Willis L. Jepson, on plants and trees of Yosemite; by William Frederic Badè, on John Muir; by François E. Matthes, on geological features of the valley; and by A. L. Kroeber, on the Indians of the Yosemite. The establishment of these lectures as a park institution to continue indefinitely is a source of keenest delight and satisfaction to me. Our thanks are also due the University of California for other courtesies extended, not the least of which is the undertaking of a comprehensive study of the animal life of the park under direction of Dr. Grinnell of the Department of Zoology. The results of Dr. Grinnell's work will probably be published this year, and will be a distinctly valuable addition to the literature of the parks.

In Sequoia National Park the future depends so much on the outcome of the enlargement project that there has been a delay in planning any extensive improvements, and we have contented ourselves with maintaining the existing roads, trails, and other utilities of the park in proper condition for public use. For the same reason no serious attempt has been made to extend the facilities of the various business interests. In fact, when the larger development of the existing park is made in connection with the territory adjacent, the scale of operation of these interests must be so tremendously expanded that a general readjustment of all concessions may be necessary in order to provide adequate service for the touring public. The sentiment in favor of the enlargement project seems to have become more pronounced during the past year, and there is every reason to believe that the year 1920 will see the fulfillment of the plan first voiced as long ago as 1891, when John Muir advocated, in an article in the *Century Magazine,* the extension of Sequoia Park to include the Kings River region.

Crystal Cave, discovered in 1918 within the boundaries of the present Sequoia National Park, has been closed to the public during the past year on account of the tendency to vandalism manifested the year before. The cave can be maintained unimpaired only by the installation of a proper lighting system and by the employment of guides to conduct parties through its various passages and to prevent depredations on its formations.

It is hoped that means will be provided for this in the near future.

General Grant National Park depends for its development, in much the same way as Sequoia, upon the outcome of the Roosevelt National Park project. It lies upon one of the natural roads of access to the Kings Cañon and will be one of the principal gateways to the larger park. During the past season it has been exceedingly popular and has been the summer home of many families from the San Joaquin Valley.

The year has been a busy one in all the other national parks, but to adequately present their stories would require many pages. So for the benefit of those who are interested in them I can merely refer once more to my annual report to the Secretary of the Interior.

The members of the National Park Service have so many personal friends among the membership of the Sierra Club that before concluding these remarks I would like to mention certain changes in the personnel of the Service. On June 10, 1919, Horace M. Albright, who was assistant director of the National Park Service from its inception, and who is himself a member of the Sierra Club, was appointed superintendent of Yellowstone National Park. He was succeeded as assistant director by Arno B. Cammerer, formerly assistant secretary of the National Fine Arts Commission. Robert Sterling Yard, chief of the Educational Division of the Service, resigned on June 30, 1919, to become executive secretary of the newly organized National Parks Association. D. L. Raeburn, superintendent of Mount Rainier National Park, was granted indefinite leave of absence on April 16, 1919, and on May 10th Major Roger W. Toll was appointed to fill the vacancy. William H. Peters, assistant engineer, was designated as acting superintendent of Grand Cañon National Park on August 2, 1919.

In conclusion permit me to summarize some of the more pressing requirements of the Service and the various parks and to bespeak from the Sierra Club a continuance of its valued interest and assistance:

1. An increase in the personnel of the Washington office of the Service, and a general expansion of the bureau in other di-

rections made necessary by the enormous increase in its activities.

2. The enlargement of Yellowstone National Park to include the Teton Mountains, the headwaters of the Yellowstone River, and other lands south of the park.

3. The extension of Sequoia National Park northward and eastward, and the dedication of this area as the Roosevelt National Park in memory of the late President.

4. The extension of Crater Lake National Park to include the Diamond Lake region immediately north of the park.

5. The addition of the Mount Evans region west of Denver to Rocky Mountain National Park.

6. The changing of the south boundary of the Mount Rainier National Park to make Ohanepecosh Hot Springs a part of the park.

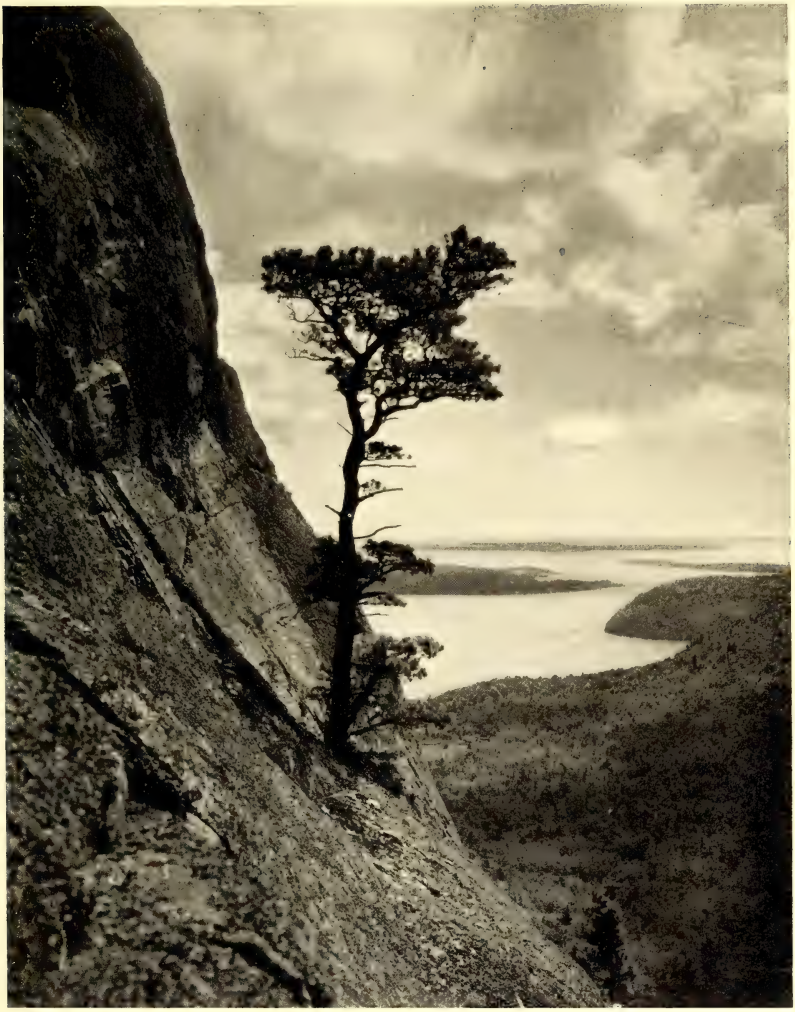
7. The acceptance by Congress of jurisdiction over Yosemite, Sequoia, and General Grant national parks tendered by recent act of the legislature of California.

8. The appropriation of funds for establishing a protective force of rangers in Mount McKinley and Lassen volcanic national parks.

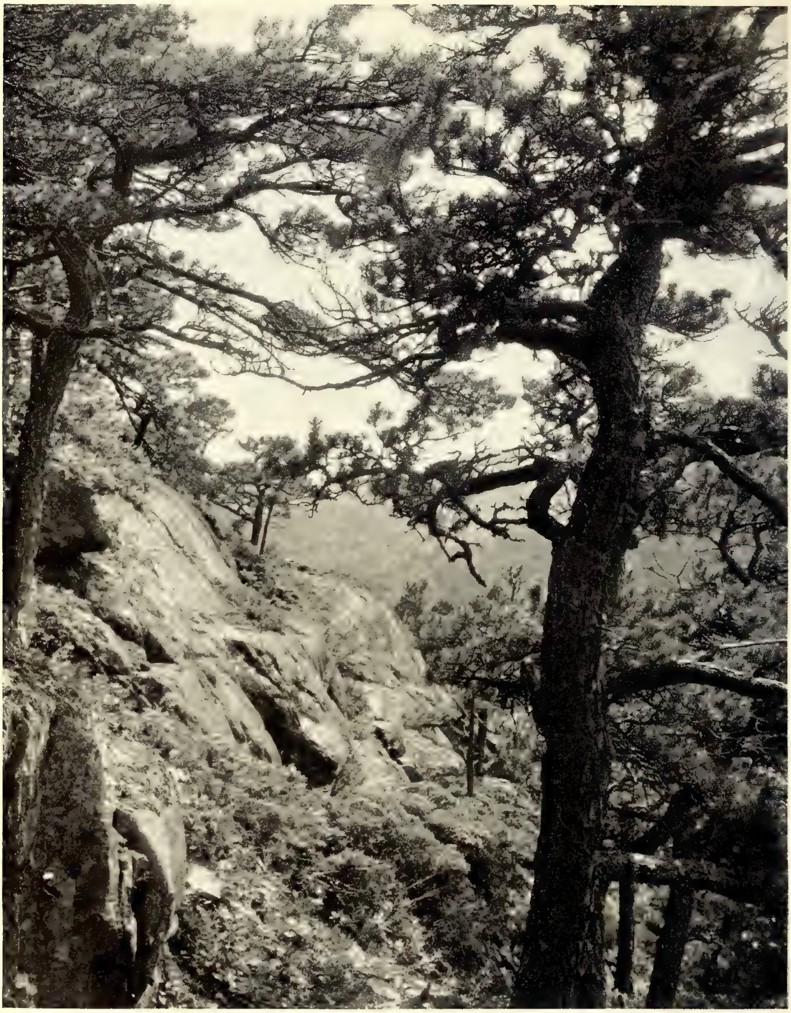
9. The adoption by Congress of a comprehensive road-building program for the national parks, with commitments as to appropriations for the period of years required to carry out the program.

10. Safeguarding of trees along highways in and leading to several national parks, and along interpark roads, with especial attention to the preservation of trees along roads in or approaching Yosemite, Glacier, and Mount Rainier parks, where the timber has passed from the Federal Government into private hands.

11. The establishment of a national touring division in the National Park Service, with power to work in co-operation with the railroads, automobile associations, highway organizations, commercial and travel clubs, etc., in the encouragement of travel in this country.



THE HARBOR OF MOUNT DESERT FROM ACADIA MOUNTAIN,
LAFAYETTE NATIONAL PARK



THE PINES AND CLIFFS OF MOUNT DESERT,
LAFAYETTE NATIONAL PARK

12. A continuance of the effective aid of the Bureau of Service, National Parks and Monuments, established by the United States Railroad Administration, after the railroads of the nation are returned to their owners.

13. The creation of game preserves adjacent to several national parks, notably Yosemite, Crater Lake, and Mount Rainier parks, in order that better protection may be given to wild animals when they are driven from the parks by snow.

MOUNT SHASTA

By John Rollin Ridge*

❦

ITSELF all light, save when some loftiest cloud
Doth for a while embrace its cold forbidding
Form, the monarch mountain casts its mighty
Shadow down upon the crownless peaks below,
That, like inferior minds to some great
Spirit, stand in strong contrasted littleness!
All through the long and summery months of our
Most tranquil year, it points its icy shaft
On high, to catch the dazzling beams that fall
In showers of splendor round the crystal cone,
And roll in floods of far magnificence
Away from that lone, vast reflector in
The dome of Heaven.

---

*The author, born March 19, 1827, the son of a full-blooded Cherokee chief, died at Grass Valley, California, October 5, 1867. His Indian name, Cheesquatalawny, means Yellow Bird, and under this pen-name he made his contributions to early California literature.

THE SIERRA CLUB OUTING OF 1919

By Charles A. Noble

◆

THE 1919 summer outing of the Sierra Club in Tuolumne Meadows was, in some respects, a duplicate of the club's preceding trip in 1917—the official outing of 1918 was omitted because of the war—but the region visited is so big and attractive, and so centrally located for side-trips of great number and variety, that it would require many duplications to give one person familiarity with it, and no mountain-lover would ever feel that he had exhausted its charms.

The outing party, about one hundred and seventy-five, reached Yosemite Valley July 12th, shortly after midday, via Merced and El Portal, and remained there until the morning of the 14th. The camp, selected well up in Tenaya Cañon to facilitate the climb out of the valley, was less comfortable than the former one, near the Stoneman bridge, and less convenient for valley excursions; but to a Sierran bound for the high mountains the human noise and dust of Yosemite seem desecration of primitive nature; so that the wait-over of twenty-four hours in this anomaly of automobiles and silks he regards, at best, merely as a necessary evil.

An early start enabled the party to make the tedious zigzags of the Tenaya trail in shadow, after which the route to Lake Tenaya lay through fine forests and beautiful meadows, with repaying views into the rugged Tenaya Cañon. After a night in camp, at the mouth of Murphy's Creek, followed by a tramp of eight miles along the Tioga Road, the party settled in permanent camp on its private estate at Soda Springs for a stay of eighteen days.

For persons of all degrees of physical vigor Tuolumne Meadows is an inviting camping-place. The altitude of 8500 feet insures invigorating mountain air; the skyline to the east, south, and west follows a succession of mountains which, at all times of day, in sunshine and storm, but especially in the morning and evening colors, are of unfailing beauty. The less hardy find ample pleasure in short excursions to the many lakes within a radius of a few miles. In these, and in the near-by streams, the fishing is good. For the more enterprising, there are endless possibilities for side-trips in all directions, into country whose beauty and ruggedness are surpassed in but few parts of the Sierra.

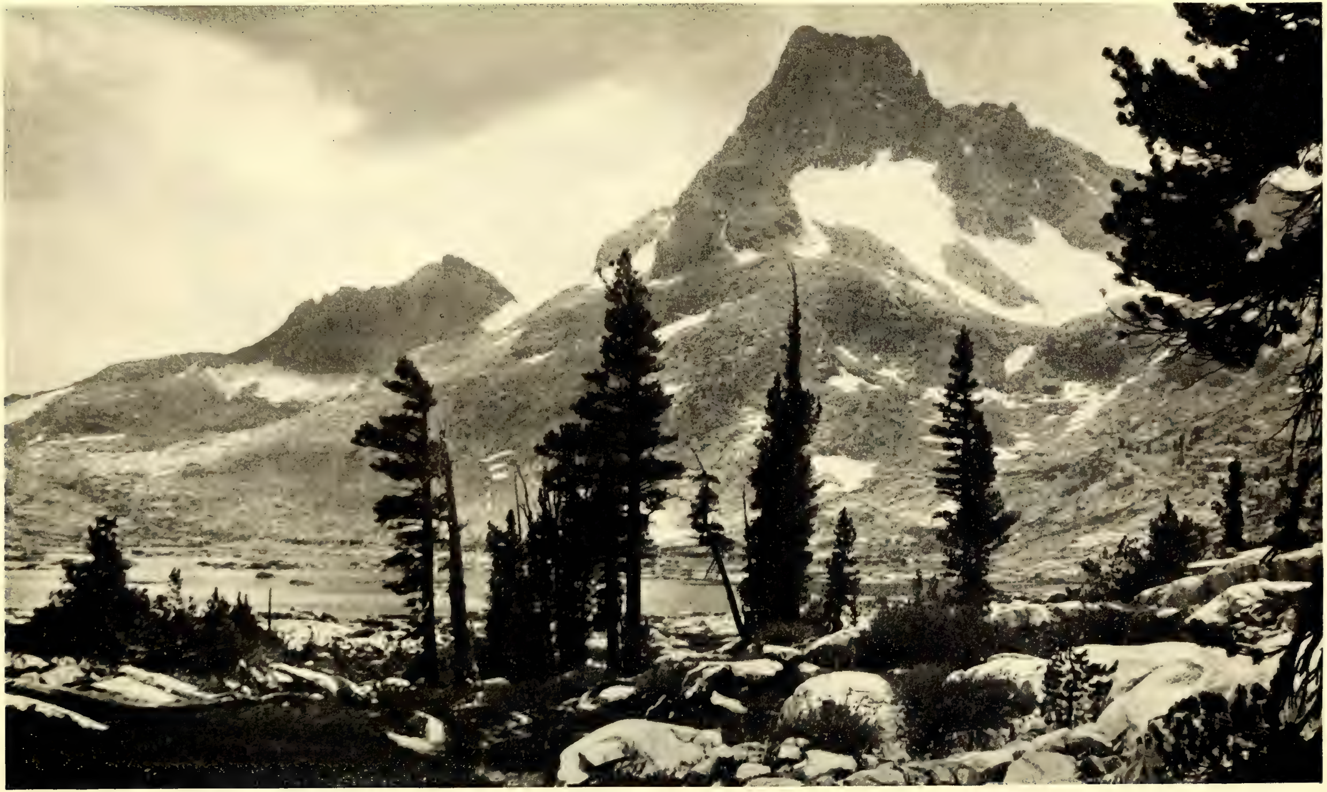
The accessibility of the Meadows by automobile is an advantage or disadvantage, according to one's point of view. A routing of forty automobiles a day past the park checking-station, reported by the forest ranger, indicates this year's volume of travel. During the club's stay at the Springs the Tuolumne River banks were dotted with auto camps, which extended far up Dana Fork and were beginning to creep up Lyell Fork. One's first impulse is to resent this intrusion into Nature's heart, intimacy with which, one instinctively feels, should be reserved for those who can achieve it by physical endeavor. Upon reflection, however, one can but rejoice when increasing numbers of one's fellow-men find healthful pleasure in Nature's gifts. And there are still remoter and less accessible parts of the mountains in abundance for those sufficiently hardy to reach them.

The rapidly increasing use of the Meadows by campers has, however, a serious side for the Sierra Club, in that the commissary's water supply is threatened with pollution. The management gave attention to this question last summer, and determined that it would be practicable, at moderate expense, to pipe a supply from Delaney Creek. This would not only be a wise protective measure, but it would, by distributing water through the camp, add materially to the convenience of those whose sleeping apartments are now a quarter of a mile from the river.

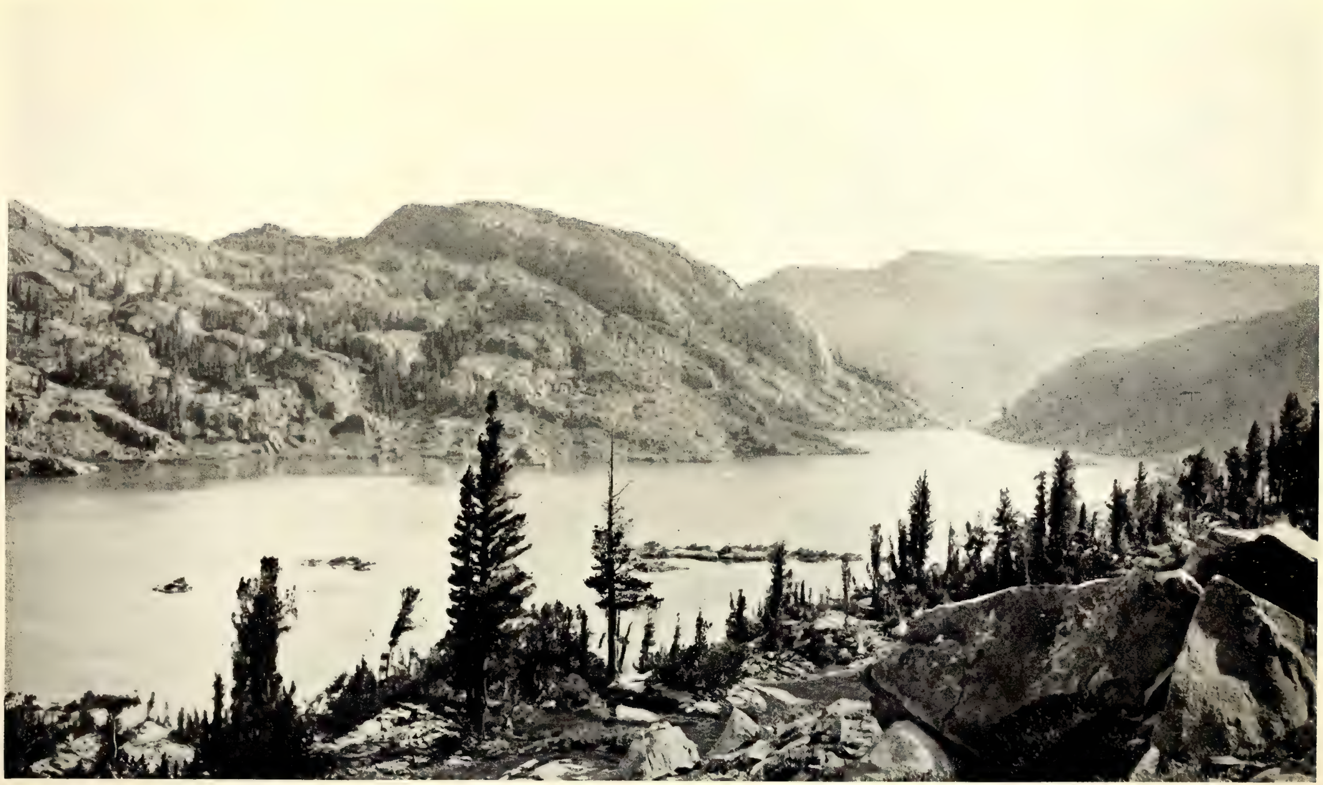
The club was no sooner settled for its two weeks' stay at Soda Springs than expectation began to rise concerning the big side-trip, the six-day excursion to Ritter and the Devil's Postpile. In preparation for this, as a muscle-hardener, Mr. Colby led a considerable group on July 17th over the Sunrise Trail to Cathedral Lake, a gem snugly set in a granite bench overlooking Tenaya Lake far below to the west. After the men and women had separated for a swim and reunited for lunch, the return was made, skirting Cathedral Peak on its south side, past Budd Lake, across cañons and hogbacks, a diversified route, selected, some thought, with a view to trying out the numerous aspirants for the longer trip that was to begin the following day. Below the shoulder of Unicorn Peak we passed unusually fine masses of cassiope, the exquisite Sierra heather, which was to greet us at so many high points in the days ahead. At the evening camp-fire, Mr. Mather, Federal Director of the National Park Service, addressed the club on plans that were maturing to save, for park purposes, some of the superb redwoods of Humboldt County.

The following day, July 18th, about ninety club members, with pack-train and commissary, started up Lyell Fork for the big side-trip. The weather was kind to us during this, as during all the other excursions of this season's outing. The only considerable storm of the month occurred during this week; but its area was considerately restricted to the Meadows, where the unprotected could, if necessary, seek shelter in Parsons Lodge. The first night was spent at the Lyell base-camp, below Donohue Pass. Those of the party who had hoped to climb Mount Lyell from this point were obliged to forego that pleasure in order that the return to Soda Springs might, without crowding, be made in six days, in time to welcome there Mr. Mather and a party of distinguished men whom he was interesting in the needs of the Park Service.

The second leg of our journey took us over Donohue Pass and across Rush Creek to a stunning camp on the north shore of Thousand Island Lake, immediately under the towering mass of Banner, with a glorious outlook over the beautiful lake toward the impressive Volcanic Ridge at the south. Here the selected few who were to climb Ritter the next day foregathered at the council-seat and openly arrived at the covenants which should control the morrow's ascent. The remainder made selection from the various possible routes leading to our next camp in Agnew Meadows, and formed groups accordingly for the departure in the morning. The group which the writer joined chose the route leading down Shadow Creek. We crossed the ridges, first into the Garnet Lake, then into the Shadow Creek basin, keeping high up. As we skirted the east



BANNER PEAK FROM THOUSAND ISLAND LAKE
Photo by William E. Colby



GARNET LAKE
Photo by Philip S. Carlton

wall of Ritter we had to look up forty-five degrees to see the top of that huge mass, so steep was the face. Following our desire to see something of the headwaters of Shadow Creek, we climbed to a small lake snuggled at the foot of a little glacier of the Minarets, a gem of sapphire blue, whose only admirer until we arrived appeared to be a solitary gull. Descending the cañon, we passed Edisa Lake and gave willing testimony to the report that it afforded the best view of Ritter and Banner. From this point an excellent new trail, not on the map, led to Agnew Meadows. Never have I seen such a variety and abundance of mountain flowers, nor traversed a finer cañon than we enjoyed this day. We lunched on Shadow Lake, also a beautiful body of water, hemmed in by high austere slopes, down the depressions of which forests of hemlock and mountain pine spread caressingly. The trail descended rapidly to the San Joaquin, so that in a short time we passed from albicaulis to juniper, aspen, and manzanita.

We found the main body encamped in a fine grove of firs on the edge of the beflowered Agnew Meadows. The Ritter climbers came in to a late dinner, weary of body but fresh in spirit after a hard climb and a long hike.

Two nights in Agnew Meadows permitted a variety of pleasures, not the least of which were fir-bough beds. The intervening day was devoted to a jaunt down-stream to the Devil's Postpile, a striking outcropping of basalt prisms, suggesting, when viewed from the side, a giant honeycomb fifty or more feet thick, and exposing on the glaciated top that same giant's parquet floor; to Rainbow Falls in the Middle Fork of the San Joaquin, resembling Vernal Falls in appearance and volume, if not in height; to Reds Meadows, and Hot Sulphur Springs, where the warm water gushes from a rich meadow and flows away in a goodly flower-banked stream; to Sotcher Lake, where a threatening shower hastened a well-earned swim; through long stretches of volcanic ash; and finally back to Agnew Meadows, a paradise of flowers, breast-high with lilies, lupines, and delphiniums, in patches as large as a dining-table.

Early on July 22d, our fourth day out, the entire party climbed to Agnew Pass, moving most of the time either through flower-carpeted forest, or above timber-line, along a sloping shelf bountifully covered with a great variety of flowers and shrubs, with a magnificent view to the west, across the cañon, upon the impressive sweep of the Ritter group; and to the south, upon the tangle of mountains that formed the watershed of the Middle Fork of the San Joaquin. I have seen no finer view in the Sierra. Bidding farewell to this splendid region, we descended to Rush Creek, made a slight detour to obtain a closer view of Gem Lake, and rose to Gem Pass, where, from a near-by eminence, the outlook to the east over Mono Lake expanded into a fine panorama. At Alger Lake (10,500 feet) the party spent the fifth night. Here, in the wake of a band of sheep, one had a suggestion of the offensive conditions that obtained quite generally in the grassy regions of the Sierra years ago, before unrestricted grazing was abolished. Alger Lake was bleak and windy; the provisions were running low; small clumps of stunted albicaulis offered the only sheltered sleeping-places; but such slight discomforts did not ruffle the spirits of the group. The camp-fire was just as enjoyable and the camp-songs and jests had the customary healthy tone.

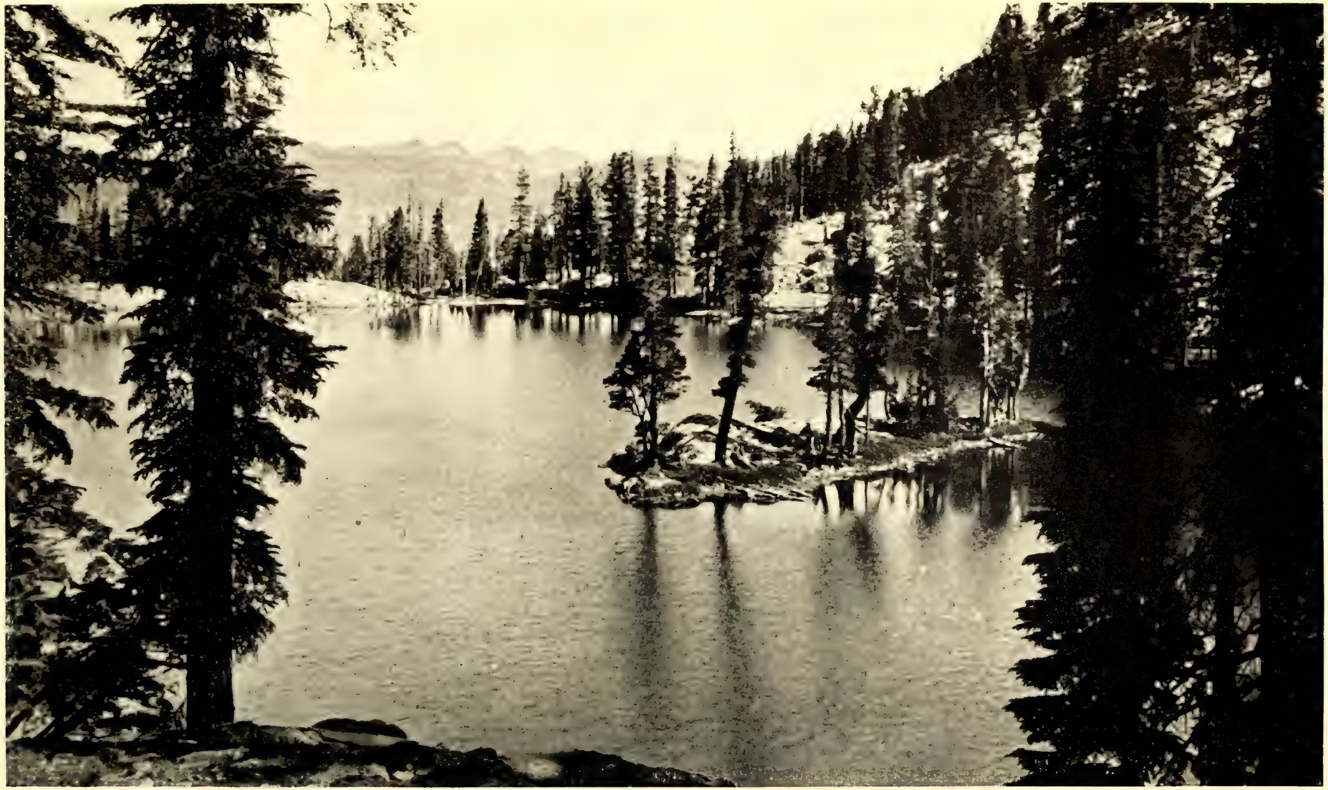
The sixth day took us over Koip Ridge, through Parker Pass and past Mono Pass, with fine outlooks down the eastern slope of the Sierra over the colorful Mono desert, and back to Soda Springs, by way of the Dana Meadows. It had been a superb experience, with no untoward incident to mar its enjoyment.

Another side-trip, second in interest only to the "big trip," was a two-day excursion to Mount Conness. The party left Soda Springs on Friday, July 25th, and made camp at the larger of the Young Lakes, picturesquely set on a glacial bench under the north slope of Ragged Peak. The Chinese cooks having missed their way, the chairman of the club's outing committee, who led the party, gave new concrete evidence of his mountain craft by stepping into the breach and preparing, with the assistance of willing hands, a most enjoyable dinner for ninety critical Sierrans. The stew was pronounced worthy of special mention. The waning sunlight on Conness to the north, and the twilight colors on the cliffs about the lake were wonderful. At the camp-fire, Mr. Matthes, of the Geological Survey, gave an illuminating talk on glacial cirques, motivated and illustrated by the position of the lake before us. The ascent of Conness was made without difficulty. The stone shelters, near the summit, and the hut on the top, housing the concrete monument, gave evidence of the labor of past years when this peak was used as a triangulation station. From Dunderberg at the north, around by Tower Peak, past the Yosemite and Lyell groups, to the Dana group at the east, the panorama was a feast. The party returned in groups by different routes. A few of us descended through a notch to the east and made our way to Saddlebag Lakes. Here a hydro-electric dam was under construction by the same company that is now utilizing the water at Gem Lake to carry current to Tonopah and San Bernardino. Although power was not yet available from Saddlebag Lakes, the company's cookhouse was able to supply us with energy in the form of delectable prune pies.

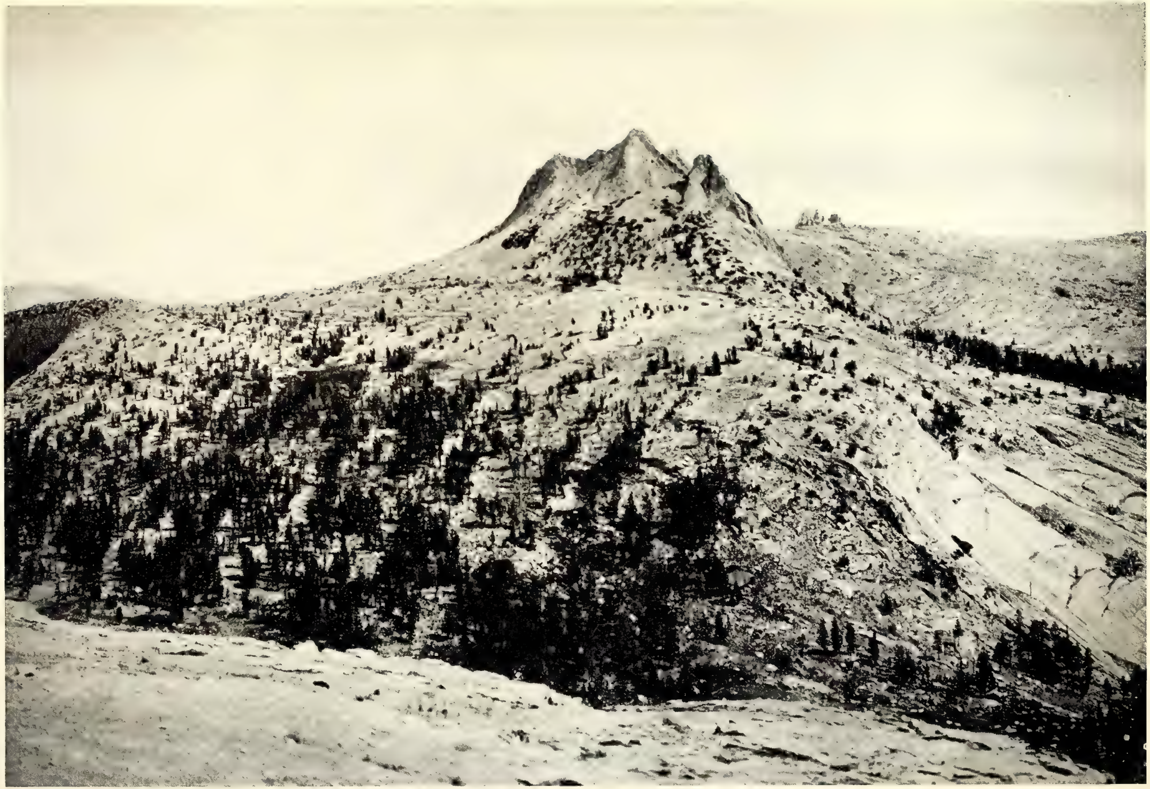
During the interval between the Conness trip and the breaking up of the permanent camp at Soda Springs, three one-day trips were made—one to lakes Evelyn and Ireland, a second to Echo and Cathedral lakes, and a third to the Gaylor Lakes, northeast of Moraine Flat, including a visit to the well-preserved stone house, erected many years ago on a timberless ridge to shelter the workers of the ill-fated Tioga mine.

The club broke permanent camp at the Springs August 2nd and moved to Ten Lakes Basin. A part went down the Tioga Road to Yosemite Creek, thence eight miles along the new trail to the basin; the remainder formed in squads of about ten each and knapsacked down the Tuolumne as far as Waterwheel Falls, then across country. My squad, under the leadership of Mr. Huber, started a day ahead of the rest, and spent two nights out, instead of one. It was an arduous but an exhilarating experience. The men carried thirty, the women fifteen pounds. Our first day ended in a cozy nook on the glaciated bench at the head of the falls, surrounded by the grand Tuolumne River walls, except to the west, where the outlook over the falls down the cañon was superb. The fishing at the Glen Aulin pool, and especially at our camping-place, had been excellent—each angler had taken his limit. At this point one was, in an air-line, but four miles from Ten Lakes Basin, but no trail and much scrambling lay between. The climb over into Cathedral Creek Cañon took us through a parklike pass; the descent into and down this cañon, where the second camp was made, was for loaded backs somewhat rough. The route lay up the south fork of Cathedral Creek, but as the fork was almost dry and the slope down which it entered Cathedral was much steeper than it appeared on the map, we were misled into retracing our steps before rising out of Cathedral Cañon, which imposed upon us the penalty of having to surmount one extra, perfectly good ridge, a fate that also befell some, if not all, of the other squads. The approach to the basin over its eastern wall affords a fine outlook, including Dana and Conness to the east, Colby Ridge to the west, and the basin itself, a network of minor ridges and hemlock forests. Descending into the basin we passed lake after lake, all of them gems, but differing in their beauty from any of those previously seen, softer in setting, due perhaps to the velvety hemlock forests which reached down the slopes to the water's edge. The club made its camp at the southern end of the largest lake, a charming spot that was to be home for the few remaining days of the outing.

No account of the 1919 outing should omit to record either the absence of Mr. Tappaan, whose unselfish devotion and never-failing resourcefulness have always meant so much for the morale of camp-life, or the unflagging energy, good judgment, and generous spirit with which Mr. Colby acquitted himself of two tasks—the one, that of guiding the myriad details incident to bringing the outing into being and making it run smoothly in the field; the other, the burden usually carried by Mr. Tappaan.



TEN LAKE BASIN
Photo by Walter L. Huber



ECHO PEAK, AND, BEYOND, COCKSCOMB CREST
Both rising above ice-swept and rounded mountains
Photo by F. E. Matthes

COCKSCOMB CREST*

By François Emile Matthes

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FAMILIAR to all who have visited the Tuolumne Meadows, and transcending perhaps all other mountain groups overlooking that campers' paradise in spectacular beauty and monumental dignity, are the pinnacled and spired peaks of Unicorn, Echo, and Cathedral. Each has its own individuality, striking and unforgettable, each is wholly different from the others, yet all are notably alike in one respect: their frail minarets and splintered crests stand planted upon full-bodied mountains of great bulk, all rising to approximately the same height; they seem like delicate superstructures, specially added for the sake of ornamentation. Indeed, they recall the slender turrets and spires on certain ponderous cathedrals of Old Europe.

The significance of this peculiar style of mountain architecture, which is not prevalent in the Sierra Nevada, has been hinted at by more than one writer. Muir and Chase both have suggested that the sharp pinnacles and crests may be summits that were never overridden by the ice of the Glacial Epoch; that stood out above even the highest ice-floods and escaped being planed down and rounded off as were the massive shoulders of the mountain pedestals under them. This explanation, though only conjectural, was eminently reasonable, and it is a genuine satisfaction, now that the region has been submitted to a systematic and detailed study, to be able to confirm its correctness and to corroborate with positive and abundant evidence the surmise of these two keen observers.

However, the matter is not so simple as it at first may seem. In Muir's day glacial science was in its infancy, and no man had as yet that perspective of the succession of ice-ages and intervening epochs of milder climate which the world-wide research of the last two decades has made known to us. To Muir and his contemporaries the Glacial Epoch still seemed a single, uninterrupted cycle of glacial conditions that slowly reached a climax, like an oncoming tide, and then slowly waned, the glaciers making many repeated but progressively feebler re-advances, like the waves of an outgoing tide. Today we know that the Glacial Epoch, so-called, really consisted of several prolonged ice-tides separated by equally prolonged intervals, during each of which the continental ice-sheet and the lesser ice-bodies on our western mountain ranges shrank back to their sources and perhaps vanished altogether.

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In the Sierra Nevada indications of at least two great ice-floods have been clearly recognized by several observers—two ice-floods that occurred manifestly at widely different times, the later culminating probably only twenty thousand years ago, the earlier, perhaps as much as several hundred thousand years ago. The evidence is the more readily established as the later ice-flood was the smaller and less extensive of the two and left undisturbed the moraines—that is, the ridges of ice-carried rock débris—that mark the limits of the earlier ice-flood. In no part of the Sierra Nevada have these facts been ascertained with more precision than in the Yosemite region and the High Sierra immediately above it. Thus it is now definitely known that the later ice-flood invaded the Yosemite Valley only as far as the Bridal Veil Meadows, whereas the earlier ice-flood advanced eleven miles farther down the Merced Cañon, coming to a halt a short distance beyond El Portal.

It will be clear from this that there must be from the Bridal Veil Meadows upward throughout the Yosemite region and adjoining the High Sierra not one but two "ice-lines," each marking the culmination of an ice-flood. The pursuit of these two ice-lines up towards the crest of the range was, indeed, for the better part of two seasons the writer's most engrossing occupation. He traced them in detail and mapped them along the length of the Yosemite, up through the Little Yosemite and the upper Merced Basin and all its tributary cañons, and also up through Tenaya Cañon and the great Tuolumne Basin and its tributary cañons. The result, it may be said, was to him, as glacialist, a genuine surprise. The two ice-lines, which in the lower Yosemite lie several thousand feet apart in altitude, were found to approach each other as they ascend the range and ultimately to coalesce at its crest. One might reasonably have expected the extensive and deep ice-fields and glaciers of the earlier epoch to have come from a Sierra crest completely domed over with smoothly sloping, unbroken snow-fields, and the relatively modest ice-streams of the later epoch to have flowed forth from cirques filled only to moderate depth, and partitioned from one another by bare rock crests and "arrêtes" rising high above the ice; but, curiously, it appears that the snow conditions along the Sierra crest were substantially the same in both epochs. *The snows that fed the vast glaciers of the earlier epoch filled the summit cirques to no greater depth than did the snows that formed the smaller glaciers of the later epoch.* The significance of this remarkable coincidence need not be here discussed—it would lead too far afield; suffice it for our purpose that the fact has been established.

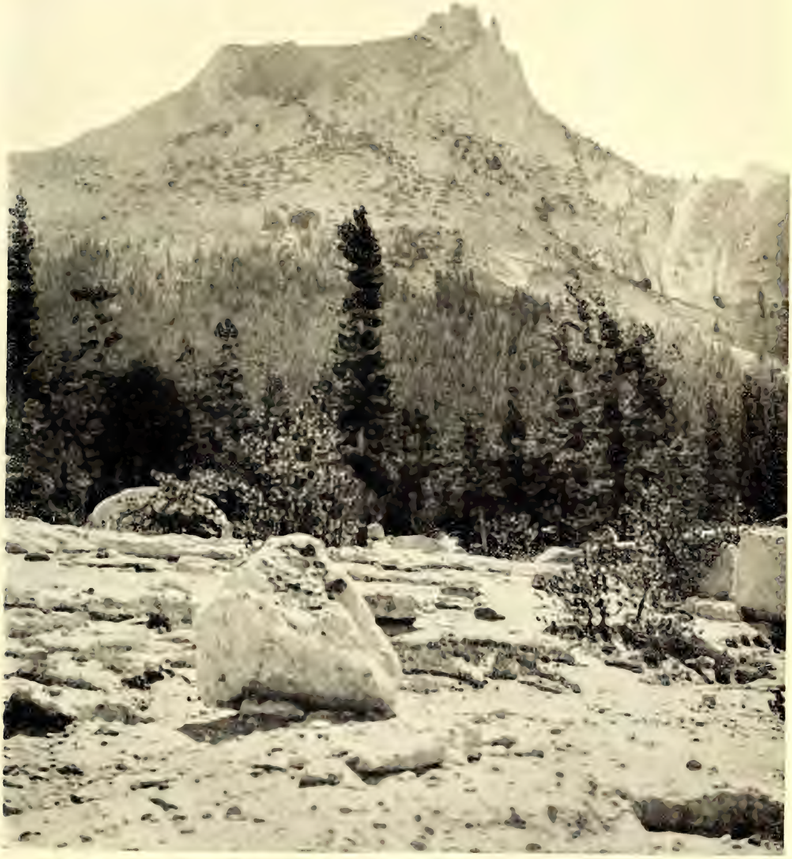
A few figures will help to give more definiteness to one's conception of the relation of the two ice-lines. The later Yosemite Glacier ended at the Bridal Veil Meadows at an altitude of 3900 feet, but the lateral moraines left by the earlier ice-stream on either side of the Yosemite chasm lie 2700 feet above this spot. At the head of the valley the later glacier attained a depth of about 1500 feet, but the lateral moraines of the earlier glacier still lie 2400 feet higher. Within the next few miles the two ice-lines converge with remarkable rapidity. In the Little Yosemite, for instance, they are only 600 feet apart. There the later ice rose within 100 feet of the top of Moraine Dome, but the earlier ice passed over it with a depth of over 500 feet. Opposite Lake Merced the difference in altitude between the two ice-lines dwindles to 400 feet, and thence upward, to the ultimate source of the glacier under Mount Lyell, the difference steadily decreases until it becomes a vanishing quantity.

Following the ice-lines up through Tenaya Cañon, they are found to be 2100 feet apart in altitude opposite Half Dome. That rock monument was engulfed by the earlier ice up to within 700 feet of its summit, but even the foot of its great cliff rose 800 feet above the surface of the later glacier. At the head of Tenaya Cañon the earlier ice rose only 900 feet higher than the later ice, and still farther up, on the divide between the Tenaya and Tuolumne basins, the two ice-lines are only 400 feet apart. In the great upper Tuolumne Basin, which held an ice-field embracing 140 square miles, the earlier and later ice-floods differed only 200 feet in level, as is to be inferred from the two ice-lines on Ragged Peak. And on the Cathedral Range, which was in large measure the generator of this immense ice-field, being the great hedge behind which the wind-blown snows accumulated, the difference was least of all. From Cathedral Peak eastward to Mount Lyell it lessened by degrees until at length it became insignificant.

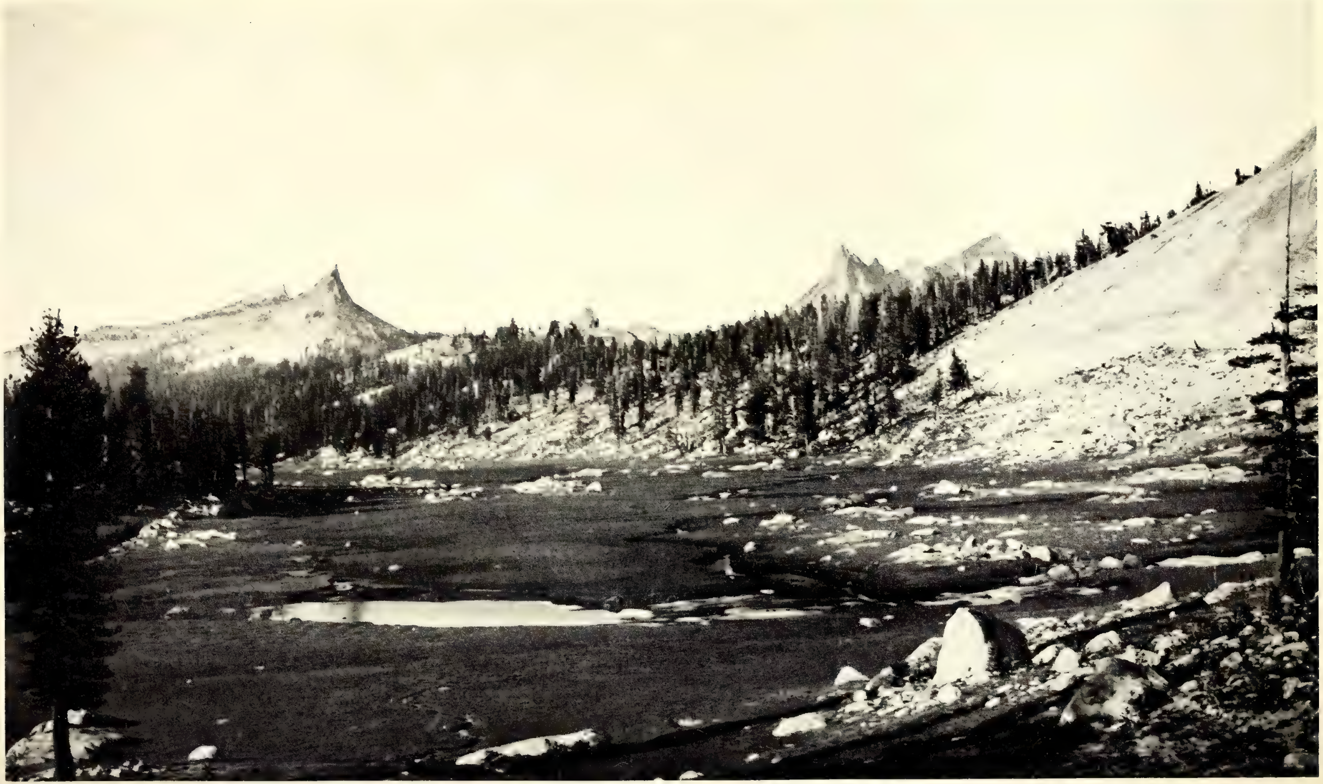
The figures are but a very few out of many scores determined by the writer on both ice-lines. Indeed, the total number of determinations made was large enough to enable him to construct a contour map of each ice surface. These contour maps, he is happy to say, have furnished excellent proof of the mutual concordance and consistency of the data.

The group of pinnacled mountains, it will be clear from the foregoing, stands in a region where the two ice-floods reached substantially the same height. Most of the work of paring away the sides of the pinnacles and crests was done by the earlier ice-flood, which was the one of greater duration, but the later ice-flood undoubtedly did much to accentuate the effect produced by the first. It is a significant fact that farther down on the Sierra flank, where the ice-lines diverge widely in altitude, and where the fluctuations in level of each of the floods no doubt were of considerable amplitude, no attenuated pinnacles or crests rising abruptly from ice-rounded mountains are to be found.

In Greenland, which is one of the few parts of the earth even now under the dominion of the ice, an Eskimo word is commonly used to designate those barren rocky summits that protrude here and there above the rapidly descending glaciers forming the fringes of the vast and otherwise continual glacial mantle. That word is *nunatak*. Physiographers throughout the world have adopted it as a technical term for rocky summits rising above surrounding ice-sheets and glaciers. The pinnacles and crests of the Cathedral Range might, therefore, be referred to as *former nunataks*. But the appropriateness and desirability of so styling them are, in the writer's opinion, open to question.



AN UNUSUAL VIEW OF THE CATHEDRAL
Photo by Willard D. Johnson



COLUMBIA'S FINGER, AT THE HEAD OF LONG MEADOW

Back of it looms another crest of the same type. In the center is the tower of Cathedral Peak. On the right are the triangular teeth of Echo Peak

Photo by F. E. Matthes

For one thing, it must be borne in mind that the pinnacles and crests were not the only summits of the Cathedral Range, nor of the entire High Sierra, that remained uncovered by the ice. There were many larger and more massive summits of varying shapes and designs, and even occasional plateau-like tracts. Only half a mile to the southwest of Unicorn Peak, for instance, stands a massive peak of blunted, pyramidal form (still unnamed, although higher than Unicorn) that rose several hundred feet above the ice. Parsons Peak and the broad-topped mountain (still unnamed) northeast of Vogelsang Pass are examples of elevated plateaus that remained emergent. Surely no one would think of placing these in the same class with the attenuated crest of Unicorn Peak, the triangular teeth of Echo Peak, or the ethereal spires of the Cathedral. "Former nunatak" might do in a generic and vague sense for all of them, but there is clearly need of a distinctive term for the more fragile, evanescent forms. What is more, there is need, it seems to the writer, of a term from the Sierra Nevada itself, if possible from the locality where the type is found in its purest form.

Now, as a matter of fact, neither Unicorn, Echo, nor Cathedral represents a "pure type" of mountain sculpture. In each the paring effect of the ice is somewhat obscured or even outweighed by other influences, either by the headward gnawing of local cirque glaciers or by peculiarities of the structure of the rock. When closely analyzed each is found to present a rather complex case. But fortunately there are in the same neighborhood three other peaks or crests each of which might well be taken as a type example.

The first of these is that narrow, linear, bladelike crest southwest of the Cathedral Pass and overlooking Long Meadow, which has been aptly named Columbia's Finger. On the topographic map the name is misplaced, and as a consequence there has arisen some confusion as to the identity of the feature to which it is supposed to refer. The writer himself is willing to admit some uncertainty on his own part, but, if form be the main criterion—and it certainly should be in a case of this sort—then the name surely belongs to the crest just mentioned. For that crest terminates southward in a tall, columnar rock pinnacle that seems to point heavenward like a slender, tapering finger (Plates XIII and XIV). It is especially impressive when viewed endwise, from the direction of Long Meadow, and doubtless it was named by someone who traveled through that flat on his way to Soda Springs. The case is parallel to that of Unicorn Peak, which was named unquestionably by someone in the Tuolumne Meadows, and whose crest does not resemble a pointing horn except when viewed endwise, from one particular direction.

The second crest in question rises a scant mile to the north of Columbia's Finger, and is of exactly the same narrow, linear type. It even duplicates the latter's terminal pinnacle, but only in what, by contrast, might be called a "stubby thumb." More perfectly modeled even than Columbia's Finger, this crest eloquently tells its story—one wonders that it should still be without a name.

The third crest is a much more imposing feature than either of the foregoing. Rising abruptly from a long-drawn ridge as even-topped as the roof of a house, about a mile south of the Unicorn, it attracts the eye at once by its wonderful symmetry and the supreme boldness of its design. Seen endwise it seems but a narrow blade, springing almost without transition from the broad mountain under it. From certain directions it is suggestive of the upper half of an ornamental "fleur-de-lis," but from most view-points it resembles nothing so much as a splendidly sculptured, gigantic cockscomb. Indeed, it stands planted upon the ice-smoothed ridge as a cockscomb surmounts the proud head of a cock.

The appropriateness of the name Cockscomb may be judged from the view reproduced herewith. The writer does not claim to be a connoisseur in poultry; nevertheless, he believes that the likeness to a lobate cockscomb is fairly close—as close as one might expect to find in a piece of mountain sculpture.

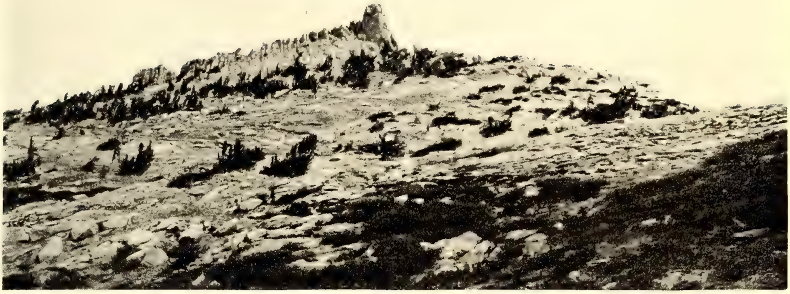
Last summer it was the writer's pleasure to accompany a party from the Sierra Club under the leadership of Mr. Colby across the Cathedral Range by the natural pass above Elizabeth Lake, and into the country at the headwaters of Echo Creek, where the Cockscomb stands. He took that occasion tentatively to submit to those present the name Cockscomb, and was gratified to find it meet with general approval. And so, with additional confidence, he now submits it to the entire membership.

There is a special advantage in the adoption of the name that is worth pointing out. Not only is the appellation Cockscomb apt because it is descriptive of the form of this crest, but it would also be an extremely convenient generic term for the designation of all similarly sculptured crests—of all crests such as those previously described, which owe their attenuated linear forms to the paring action of the ice that split upon them and passed on either side without overwhelming them. It would admirably serve the physiographer's needs as standing for the type of mountain sculpture of which the beautiful crest under discussion is the finest example known.

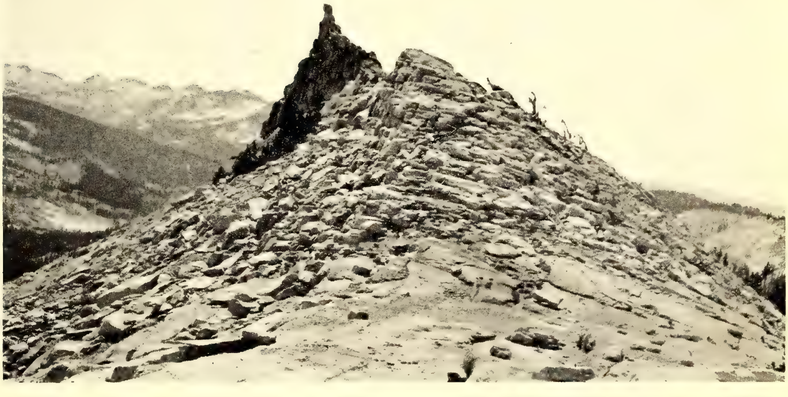
It is a pleasure to record here the successful ascent of Cockscomb Crest last summer by Mr. Walter L. Huber. As may be surmised from the picture, the peak is of the kind that puts the boldest of mountaineers on his mettle—nor has it been scaled but twice, so far as is known. At the time of his ascent Mr. Huber believed himself to be the first to reach its summit, but, as he recently wrote me, he has since learned that in 1914 the Cockscomb was successfully scaled by Messrs. Lipman and Chamberlain of the Sierra Club. All three deserve our heartiest congratulations.

In conclusion, a word anent the desirability, the urgency even, of the members of the Sierra Club giving serious thought to the bestowal of appropriate names upon those peaks, lakes, and other prominent landmarks within the Yosemite National Park which are as yet unnamed. The next few years doubtless will see a tremendous influx of tourists and pleasure-seekers into the higher portions of the park, more especially into the Tuolumne Meadows and the Lake Merced neighborhood. That influx, indeed, has already set in, as all those of us who camped with the Sierra Club at Soda Springs last summer have had ample opportunity to see for ourselves. One inevitable result will be the proposal of names for all such features of the landscape as are of especial popular interest and still without names on the map. That this naming is likely to be mostly haphazard and ill-considered is almost a foregone conclusion—one need but visit a tourist resort where the naming has been left largely to the public and the guides. We of the Sierra Club, it seems to the writer, owe it to the glorious mountain country that is so dear to us to forestall such a fate for its landmarks. As it is, some of them already bear names that are distinctly inappropriate or even objectionable.

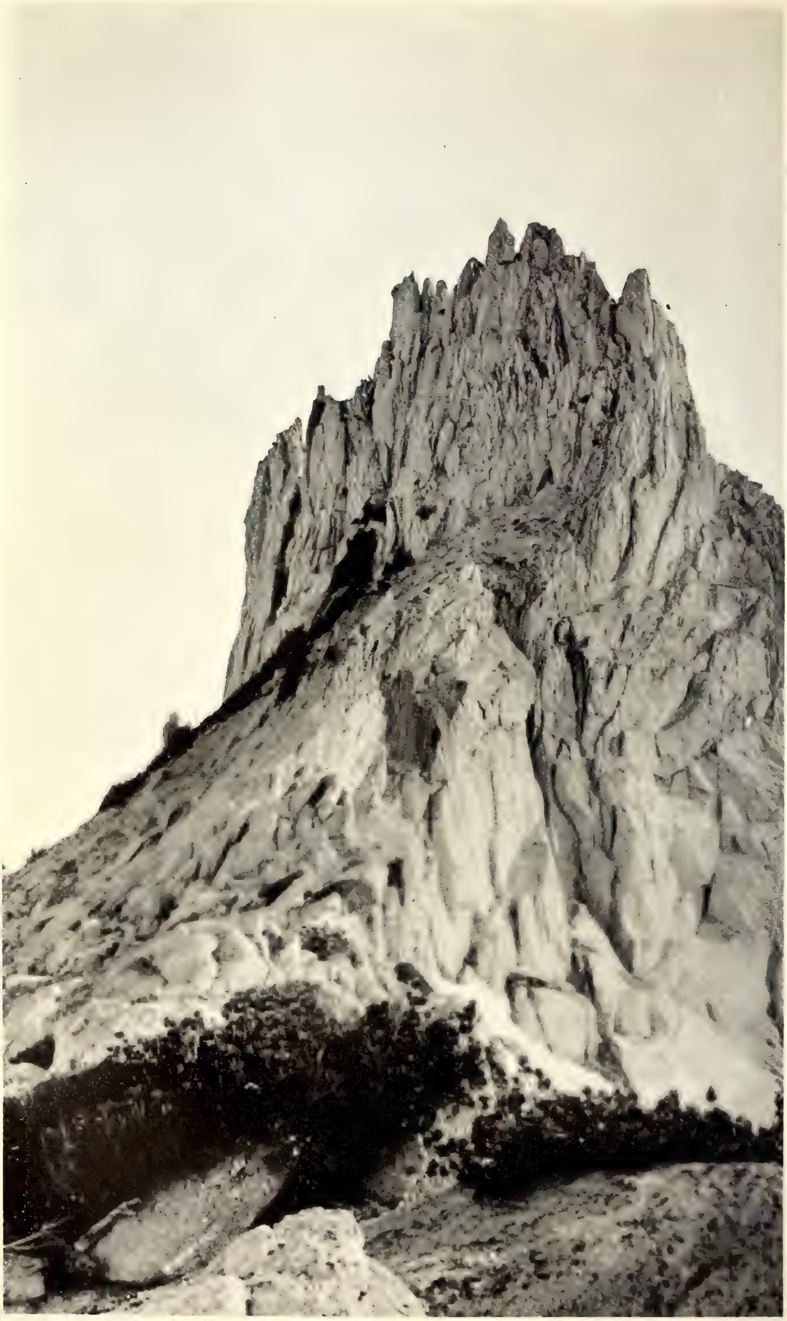
The writer ventures to make this suggestion, although he is by no means certain that Cockscomb Crest, the name proposed by him, will stand. It is still to be acted upon, first by the Sierra Club as a whole, and second by the United States Geographic Board. But he cherishes the hope that in any event his proposal will stimulate interest in the duty before us—and it is plainly a duty—of finding suitable names for the features of the High Sierra.



A BEAUTIFUL CREST OF THE COCKSCOMB TYPE
About one mile north of Columbia's Finger
Photo by F. E. Matthes



NEAR VIEW OF COLUMBIA'S FINGER
The crest is least well defined at the north end, which is in the foreground
Photo by F. E. Matthes



COCKSCOMB CREST
The most magnificent of all the sharply attenuated crests that indicate the highest level reached by the ice in the High Sierra
Photo by F. E. Matthes

THE PROPOSED ROOSEVELT NATIONAL PARK

By Henry H. Saylor, F. R. G. S.

◆

As I look over the notes jotted down while on our trail trip in the High Sierra last summer, they seem very prosaic, very brief, and, without the pictures that memory recreates, most uninteresting. Pale, ghostlike things they are now, like the wind-drifted tracks of a deer in the snow.

> *Mon.—8/4—Broke camp 10 a. m. Lunch at Tent Camp Meadow. Climbed to Goat Mt. Pass. Photographed there. Descended to Granite Basin, 5:30 p.m.*

They give but the mere frame of the picture, upon the canvas of which must be laid all the color of granite peaks sheltering pockets of snow; rock-bound lakes of a blue-blackness that is found in no tubes of paint; stunted white-bark pines struggling for their very existence in the shelter of clean, gray boulders; alpine flowers of pastel colors and exquisite daintiness; the inverted bowl of clear blue sky, cloudless and serene.

We were in the midst of the proposed Roosevelt National Park, living a life from which was excluded all the petty things of our vaunted civilization. Far from railroad, from mail and telegraph lines, out of reach even of the automobile, which dares all but the wildest country in these modern days, we were free to look upon one of Nature's most glorious pages, bearing in characters of granite the history of the ages.

It was after five when we rode slowly down the steep trail into Granite Basin. Already the sun had dropped low enough toward the western mountain wall to bring on the evening chill of the high country. About a mile across the basin, as our maps showed, lay a lake fed directly by the melting snows of the peaks. While the rest of us unpacked and sought some sort of a level space upon which to unroll our sleeping-bags, the Oldtimer and the Doctor took their trout-rods and a book of flies and set out on foot to try their luck. Supper, the end and aim of all our High Sierra days, came, was seen, was conquered before we heard their call as they drew near our comforting beacon-fire. One carried a string of forty magnificent Eastern brook trout—gamest fish that swims. The other lugged his coat full of clean, white snow, gathered on the way, to serve as the only fitting resting-place for such trout while the camera recorded their glory.

Bundled snugly in sweaters, we lay spoke-wise around the fire, on the sweaty, hairy blankets that had eased our saddle animals throughout the day. The talk was not of peace treaties, nor of art, nor of business. As we lay toasting our toes, turning on this side and then the other to grill one favored spot of our respective anatomies and then another, with the vastness of the outer universe above us, out beyond the marching stars, we talked of flapjacks, of a bad spot in the day's trail, of the horse's small intelligence and wonderful memory, of the morrow's journey, of the day's work.

Life in the High Sierra was sufficient unto itself. For the moment we were free of civilization's bonds, free to live life in its essence, unfettered, unsophisticated, untamed.

A big mule, curious regarding this extraordinary pile of travel-stained canvas with a sparsely covered head sticking out of one end, came pounding slowly along the earth, my pillow, just as the gray of early morning was becoming tinged with the rosy glow over the eastern peaks. I rolled over for another nap as the packers were starting down the basin toward the faint tinkle of the bell-mare to round up the stock. The smell of frying bacon, blended nicely with the smoke of burning tamarack, tickled my nostrils. The rattle of fork and spoon upon tin plates warned me of a portentous event—breakfast—and I dashed for the icy stream to bring the quick reaction to numb limbs and full wakefulness to a body refreshed by a sleep that only the mountains can give.

One day was very like another. A great big breakfast of hot mush lubricated from the two-hole can of condensed milk; a heaping plate of fried bacon and potatoes; a third course, indefinitely prolonged, of sour-dough flapjacks anointed with strawberry jam; bread hot from the Dutch oven; three or four crisp fried trout eaten from the cob—a shameless meal, consumed without shame. Then the packing—in ordinary life and ordinary places a most discouraging task, but here merely a succession of animals to be laden and hitched leisurely, methodically, joyously. Time was never of the essence of the contract. If we got under way at nine, we were in danger of breaking a record; if at eleven, all well and good. The five of us usually took the trail a half-hour or so ahead of the packers and train, meandering on our way. A curious bit of conglomerate rock would stop us for a look, a stream always—for our thirst was unquenchable. A vista down a valley, a new view of some familiar peak, an alpine garden of wild flowers, would call for unlimbering the camera and tripod.

Lunch was merely incidental, thanks to our nearly adequate breakfast. Its time was a widely variable one, its place determined largely by what was offered in the way of feed for the stock, in addition to the essential water. A small flour-bag on the saddle-pommel would disclose a few hunks of hard bread, perhaps some cold fried ham or bacon, certainly a dessert in a can of peaches or pears. Half an hour later would find us in the saddle once more.

The afternoon's ride was frequently the larger part of the day's journey. Its end had to find us near good grazing—not an easy thing to find in that country when the sheep occupy it —preferably close beside a stream, and with a grove of trees for our sleeping-quarters, if the gods were so kindly disposed.

My inclination is to speak of the evening meal, but good taste bids me forbear. With the brief admission that it was larger, more varied, with rather greater bulk than that offered by the matutinal affair, I am constrained to allow the reader's imagination to do its worst.

We were following the Muir Trail along the backbone of the Sierra from Grant Park to the Yosemite, by way of the South Fork of the Kings River, Granite Pass, the Middle Fork of the Kings, Grouse Meadows, the Evolution Basin, Vermilion Valley, Goodale Pass, Fish Greek, the Devil's Postpile, Thousand Island Lake, and down the Lyell Cañon to the Tuolumne Meadows. The names alone almost epitomize the glorious country that Clarence King, Muir, Le Conte, and others have known far better how to picture in words. May I claim only the credit of knowing enough not to try to describe it? If I can convey the slightest impression of what life among its great peaks meant to us, I shall ask no more. The spell of those twenty days has been cast over each one of us, not for a month, nor for a summer, but as a spice to our whole short span of years. We entered upon it eagerly, expectantly, sniffing the air of adventure that always draws men's souls. We left it sadly, but mellowed, inspired, contented, with the calm, sure peace that the Sierra bestows upon those who will receive it.

Yet there are those who say that we Americans have no need of such a playground—there are square miles enough of national parks. They will quote you statistics to show how many cattle can be grazed upon that high pastureland, how many sheep can be fattened among the rocks of its precipitous slopes. They will talk of timber wealth and mining, of highways, and of the profits the Government might reap from its vast acres.

The area that it is proposed to take over from the national forest for a national park is not a cattle country; its sparse pasture will hardly repay even the sheepman's seeking; its trees, with the exception of the Sequoias in the lower warm corner, which the nation will not have destroyed, are not worth the lumberman's expense of cutting and taking out. This western flank of the Sierra is not commercially exploitable.

Assuming for the moment that it were or might be made valuable in dollars and cents, are we as a nation in need of the paltry return that might be squeezed out of it? Because Niagara has uncounted horsepower in its bosom, do we give it over to the engineers? Because our dooryard gardens could be made to produce food—and are so utilized in time of real need—shall we burn our perennials and shrubs, our flowering bulbs and trees?

Thank Heaven we have in this great land of ours some of Nature's manifestations that are worth going to see, worth preserving for all time, worth cherishing for the good of men's souls! The time is coming when it will be harder than it is now to set these great things of the earth aside for the good of all the people. Every day that fact is brought home to us in our efforts to restore the beauties of our cities and towns that have been defaced and almost destroyed in our unthinking march toward material things.

We must save the heart of the Sierra while we may. Always there stretches out to us the beckoning finger of the unattainable. The Yosemite, the Yellowstone, Glacier Park, even the recently remote Tuolumne Meadows, unrivaled in their different appeals, already are becoming crowded. He who learns to know them wants to go on beyond, along the harder, untraveled paths. Solitude, that greatest healer of the soul of man, is his great necessity. He will, he must, have the place where it may be found, and that place is, and will remain, the High Sierra.

SONG OF THE OPEN ROAD

By Walt Whitman

AFOOT and light-hearted I take to the open road,
Healthy, free, the world before me,
The long brown path before me leading wherever
I choose.

Henceforth I ask not good fortune, I myself am
good fortune,
Henceforth I whimper no more, postpone no
more, need nothing,
Done with indoor complaints, libraries, querulous
criticisms,
Strong and content I travel the open road.

NORTHWARD OVER THE JOHN MUIR TRAIL

BY FRANCIS P. FARQUHAR

THE John Muir Trail is by no means completed. Some very important sections have been developed by means of the funds appropriated by the legislature of the State of California, and these, together with the trails already existing, make it possible to traverse the length of the Sierra from Mount Whitney to Yosemite, but not entirely by the high mountain route that it is hoped will ultimately be opened. When the remaining links have been joined it will indeed be a magnificent memorial, a highway for devout pilgrims blessing the memory of the prophet who was the first to sing the praises of this glorious sequence of mountain, meadow, pass, and lake.

During the past year there have been two serious interruptions to the hitherto steady progress toward the completion and use of the trail. In the first place, Governor Stephens declined to approve the appropriation made by the legislature last spring to continue the construction during the next two years. Secondly, the route was swept from end to end last summer by a consuming horde of sheep and cattle. The first of these unhappy actions cannot now be helped, although the error can perhaps be brought so insistently before its author as to prevent a repetition. The second action is not likely to be repeated, for the protests of last season's campers have been numerous and vigorous, and there is assurance from the Forest Service that such abuse of grazing privileges as went on last summer will not again be tolerated. Another such season would permanently injure the feed resources at points essential to all continuous travel along the route laid out for the John Muir Trail.

The prospect of traversing the Sierra from one end to the other, close to the highest peaks and passes, has been an alluring one since the region was first explored. The records of Muir, Solomons, Le Conte, and the State and Federal survey parties must always be the envy of those of us who have followed after. For to them belong the rich experiences and high adventures of the days when routes were uncharted. It is to their ardent spirits, to the fine skill of the members of the United States Geological Survey who mapped the intricate topography, and to the thorough labors of the trail-builders under direction of the United States Forest Service and the State engineers, that we owe thanks today for the conditions that make it possible to behold in comparative comfort the wonders of this incomparable region.

The route of the John Muir Trail as originally planned included a section from the head of Bubbs Creek in the Kings River region via Glenn Pass and Rae Lake to the extreme headwaters of the South Fork of Kings River, and thence over the divide to the head of Palisade Creek and down to Grouse Valley in the Middle Fork of Kings River. This section is not yet open for travel with animals. For the present, therefore, the John Muir Trail may be considered as following the lower route down Bubbs Creek to the main cañon of the South Fork of Kings River, thence ascending to Granite Basin by the Copper Creek Trail, over Granite Pass and down to Simpson Meadow. From this point a trail has been built up the Middle Fork to Grouse Valley, connecting there with the permanent route of the memorial trail. There are other sections of the trail that have not yet been improved to the standards established for the memorial, but they are passable and they follow substantially the ultimate route. During the past summer a party led by Mr. Herbert W. Gleason, of Boston, traveled the entire length of the route from Mount Whitney to Yosemite, taking the Granite Pass detour. Another party, of which I was the leader, picked up the trail at Kings River Cañon and, following almost literally in Mr. Gleason's footsteps, arrived at Yosemite about a week later. In the hope that the experiences of these two parties may be of benefit to subsequent travelers, particularly in respect to trail and feed conditions and practicable schedules of day's journeys, I offer the following comments on the route.

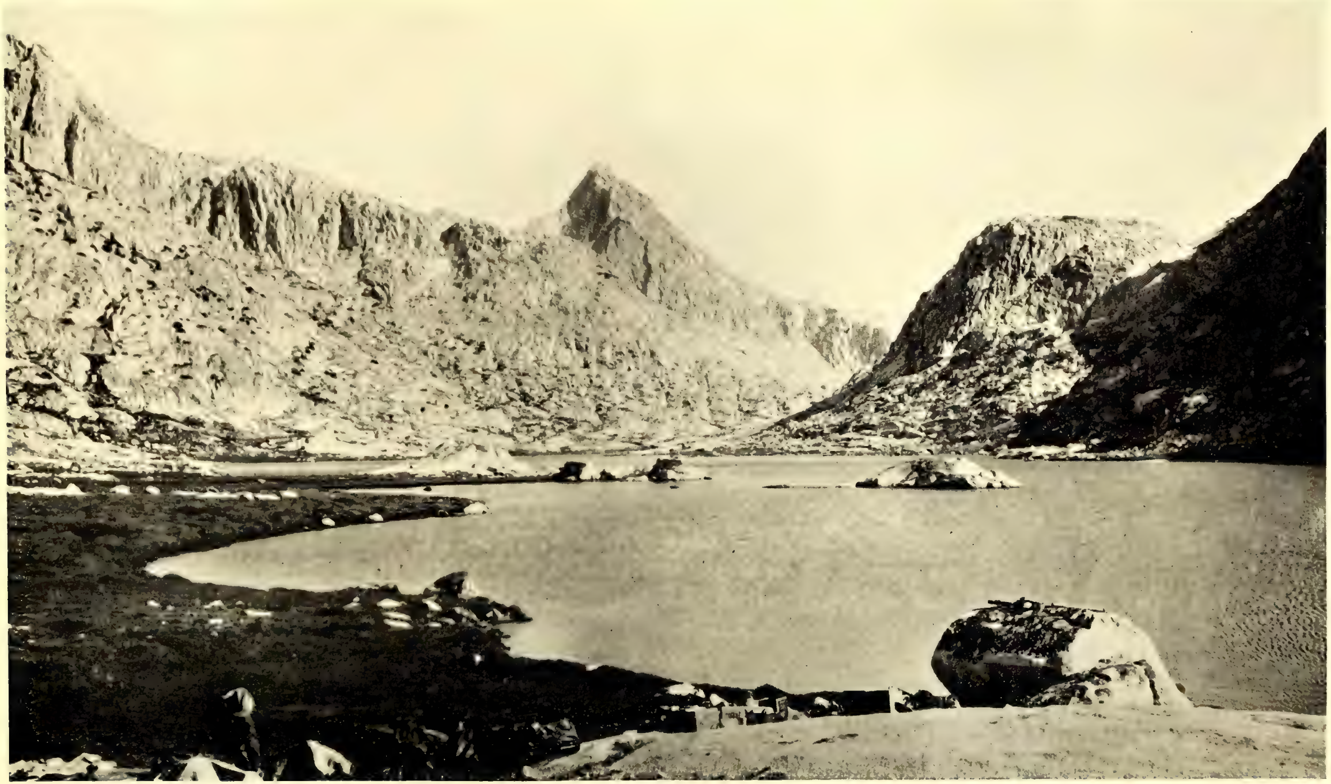
The section from Mount Whitney to Bubbs Creek was covered in the club's outing in the summer of 1916. Starting from Crabtree Meadow, at the base of Mount Whitney, it is an easy day's journey to good camping-ground in Tyndall Creek basin.

Last summer Crabtree Meadow was badly overrun with cattle, but presumably there will be better regulation in the future. There is sufficient feed at Tyndall Creek. The next day's journey crosses the main crest of the Sierra and skirts the source of Shepard Creek, which flows into Owens Valley on the east side of the range. After a short distance Junction Pass (13,400 feet) is reached, and the trail crosses over into the head of Center Basin in the watershed of Kings River. Prior to the opening of this section of the John Muir Trail, in 1916, it was practically impossible to cross with animals from the headwaters of the Kern to those of the Kings. Harrison Pass, a little farther to the west, had been negotiated by a few parties, but only at great risk, and it was never considered a practicable route for ordinary travel. The Junction Pass route, therefore, may be regarded as one of the most important contributions of the John Muir Trail toward freedom of travel in the Sierra.

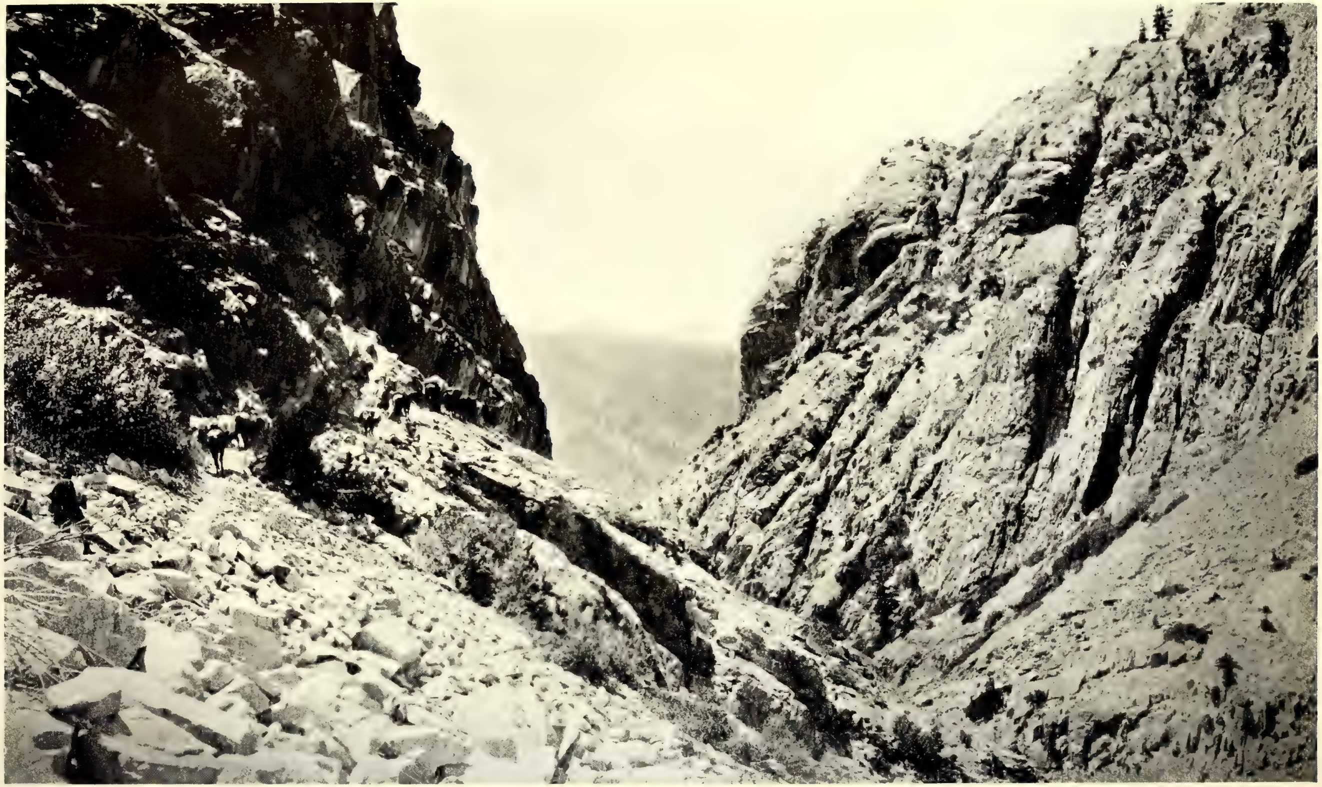
An excellent camp-site is to be found at Vidette Meadows. Here the prospect is full of charm, the fishing is good, and the animals may recuperate in good pasturage. At this point one must for the present diverge from the high mountain route that we hope will soon be constructed. It is possible to cross Glenn Pass and camp at Rae Lake; but this is a hazardous route for animals even under the most favorable snow conditions. Moreover, one is compelled in the end to swing back by way of Woods Creek to Paradise Valley and eventually cross to the Middle Fork by Granite Pass. So, as there is a long journey ahead, it is perhaps best to go down Bubbs Creek from Vidette Meadows to the main cañon of the South Fork of Kings River.

The meadows in Kings River Cañon are privately owned, but feed privileges can be obtained at an established price per head. Camping is free. There is a small store at the place formerly known as Kanawyer's, where as time goes on one may be more and more likely to find supplies in desired quantities. From here one may telephone to Giant Forest or General Grant National Park and send telegrams and mail. It is the last possibility of the sort to be found for many a mile on the northward journey. It is well to overhaul the outfit thoroughly under the favorable circumstances of Kings Cañon and to give every at-

PLATE XVI.



EVOLUTION LAKE AND MOUNT HUXLEY
Photo by F. R. Parker



MIDDLE FORK OF KINGS RIVER BETWEEN GROUSE VALLEY AND SIMPSON MEADOW
Photo by F. R. Parker

tention to the animals' shoes, for the way ahead is rough and rugged.

The Copper Creek Trail starts a short distance west of the store, and a sharp grade begins almost immediately. Five thousand feet above the cañon floor a ridge is crossed and the trail passes into Granite Basin—a vast concourse of bare rock, water, snow, and bunch-grass, strewn about like miscellaneous raw material. Almost at the head of the basin, a little clump of tamaracks affords the only shelter for camp. The trail continues rough and very trying to the animals' hoofs over Granite Pass (11,333 feet) and for quite a distance down on the north slope. At Dougherty Meadows, about half-way down, we first encountered sheep and beheld the desolation they create. For a considerable distance the trail was obliterated by their tracks, the soil far and wide was pulverized, and all vegetation was clipped to a uniform height of some twenty inches from the ground. A fine dust hung in the air bearing with it a rank, obnoxious stench. May the traveler of future years be spared this irritating experience! This section is one of the famous beauty-spots of the Sierra. There is a fine stand of forest, and the views across the Middle Fork to Mount Woodworth and up the cañon to the Palisades are on the grand scale distinctive of Yosemite-like country. One can just see Tehipite Dome rising above the deep gorge to the westward.

Simpson Meadow is a delightful camping-spot, and it is worth while to "lay over" at this point for a day or so if time permits. The trip to Tehipite can be made from here, going down one day and returning the next. There are other choice spots ahead, however, and in any schedule of stop-overs Simpson Meadow should not be given preference.

There is now an excellent trail between Simpson Meadow and Grouse Valley. The cañon was formerly impassable from the mouth of Cartridge Creek to that of Palisade Creek, but in the summer of 1914 a considerable amount of work was done on this section through funds furnished jointly by the Forest Service, Fresno County, and the Sierra Club. The work was completed in the summer of 1916 with the aid of part of the money from the John Muir Trail fund. It is only a half-day's journey to Grouse Valley, and one may arrive in plenty of time for an afternoon's golden-trout fishing. The falls of Cartridge Creek may be visited on the way. It is not a trail along which to hurry.

Grouse Valley is perhaps the most ideal camping-spot along the whole route. It is hard to keep from rhapsodizing upon it; but as the purpose of this article is primarily utilitarian, I will merely remark that water, fuel, shelter, feed, and fish do all abound. There are superb side-trips in every direction. An impressive view of the North Palisade can be obtained by taking the Bishop Pass trail up Dusy Creek. The ascent can be made by making a base camp at the head of this creek.

There were several large bands of sheep in the Middle Fork region last summer. The abomination was everywhere. At the close of the season these "hoofed locusts" were turned into Grouse Meadow itself, which was contrary to the regulations of the Forest Service. This action, however, was only one of a long list that go to prove the impossibility of regulating sheepherders. There is only one way to protect the Sierra for recreational and educational purposes, and that is to exclude sheep entirely. When this region becomes a part of the national park system, as it inevitably must, the grazing of sheep will be prohibited in accordance with the established policy of the Park Service. The same prohibition should be extended all along the line of the John Muir Trail, even in those sections that may remain under the jurisdiction of the Forest Service. The Sierra Club, led by John Muir himself, worked for many years to bring about the exclusion of sheep from the west side of the Sierra, and at length prevailed, only to have the work undone in the past few years under the guise of a war measure. If there were not good assurance that sheep would in the future be excluded from this region, I would not trouble to write this article, for but few people would care to follow the John Muir Trail.

The next stage in the journey northward is the most splendid of all—over Muir Pass and through Evolution Basin. Until the building of the new trail, Muir Pass had rarely been crossed with animals. George R. Davis, of the United States Geological Survey, was probably the first to succeed when he led his pack-train across in 1907. Le Conte, Hutchinson, and McDuffie, of the Sierra Club, followed in 1908. But it was not until the construction of the John Muir Trail that this route became at all practicable for any except the most skillful and intrepid pioneers. A passable trail was completed in 1917, and additional work during the past season of unusual freedom from snow finally opened the way to regular and safe travel.

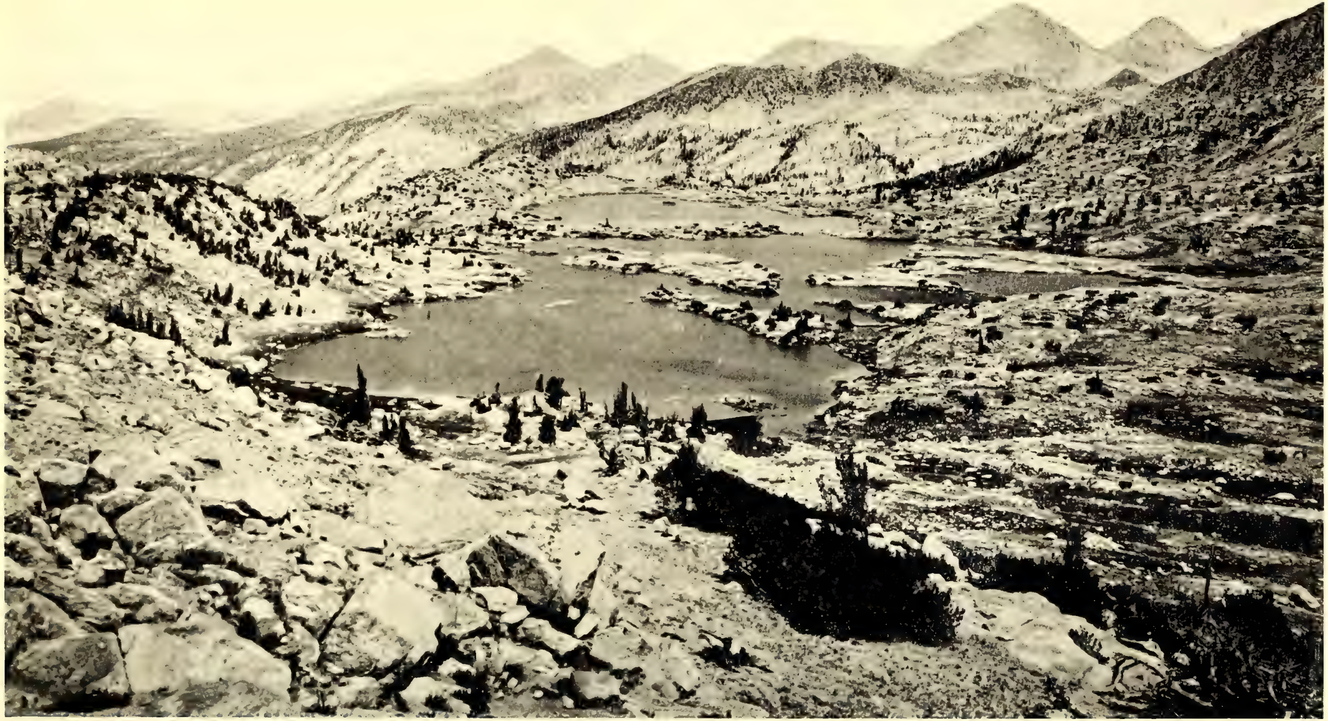
In order to make the crossing with full allowance for unexpected happenings, it is advisable to make an early start. The full distance can undoubtedly be covered in one day from Grouse Valley; but it is very much better to move up to Little Pete Meadow, or even a few miles farther, and camp close enough to the pass to make the following day's journey a truly enjoyable one. In sheepless years there is good feed at Little Pete. Last year we found it all consumed and had to move up Le Conte Cañon to an altitude of a little over ten thousand feet, where we found shelter and a little bunch-grass near a diminutive lake. It was a cold camp last year, and in many seasons would probably be occupied by snow even in August. Unless the conditions are definitely known, therefore, it is best to camp at Little Pete Meadow.

Just before you reach the crest of the pass on the south side, you come to Helen Lake; on the north side is Wanda Lake. They are named for John Muir's two daughters. The crest of the pass is at an altitude of 12,059 feet. To the west is Mount Goddard (13,555 feet); to the south a group of black summits, all about 13,000 feet; and almost overhead to the southeast grimly crouches the Black Giant, otherwise known as Mount Goode (13,312 feet). Northward stand the crags of the Evolution group: Huxley, Haeckel, Spencer, Darwin, and Wallace. Fiske and Powell are even closer. Darwin is the highest, 13,841 feet; the others are very nearly as high. As the trail passes below Wanda Lake these peaks are disclosed in ever-changing perspective. It is well that the trail hereabouts is well graded, for the eye becomes fascinated by the spectacular surroundings and cannot be spared for such trivial matters as the insurance of the neck. Two small irregular lakes are passed at the base of Mount Huxley, and the trail then descends to Evolution Lake. Camp can be made at the lower end of the lake, although the shelter is scanty. We found the place preempted by sheepmen and a band of two thousand head of woolly things that gave off a powerful aroma, causing one to have great sympathy with the teacher in that well-known episode of Mary's little pet. Even under the best of circumstances, it is perhaps as well to continue two or three miles farther and camp by the side of Evolution Creek near Colby Meadow. No better camping-ground could be desired. A day or two should be spent here, if possible, permitting exploring trips back toward the Goddard Divide and among the Evolution peaks. The mules and horses will not object to a rest.

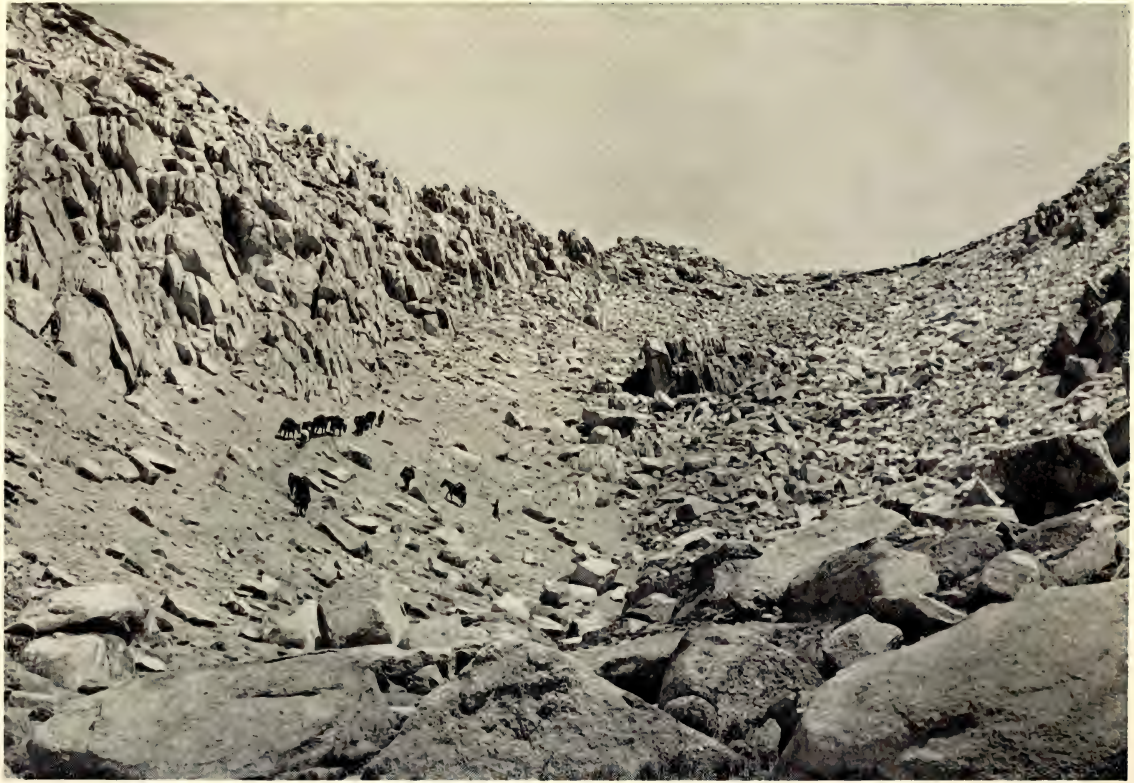
Blaney Meadows is the objective for the next day's travel. The John Muir Trail builders have put this section in excellent condition, regrading the steep places and smoothing out the rough ones. Suspension bridges have been built across the South Fork of the San Joaquin just below its junction with Evolution Creek and across Piute Creek where it joins the South Fork. The trail at this point, and indeed all the way from Simpson Meadow, is a fine indication of what the John Muir Memorial will ultimately mean when the entire route has been completed to the same degree of excellence.

From Evolution Creek it is all good going and slightly downhill, so you can pause for a moment at the junction of that creek with the South Fork to observe the trail that branches to the southward up the cañon of North Goddard Creek to Hell-for-Sure Pass. Prior to 1917, when the John Muir Trail opened Muir Pass to general travel, this was the only practicable route between the South Fork of the San Joaquin and the Middle Fork of Kings River. It reaches the latter at Tehipite Valley, or at Simpson Meadow by way of Tunemah Pass. If you prefer to return to the Kings River country rather than continue to Yosemite, you may like to go back that way. You will find the Tehipite route better than the Tunemah Pass route, but in either case you will cock your hat and tighten your belly-band and swagger a bit as you cross Hell-for-Sure, which you will be ready to admit is not a misnomer. First, however, you must not fail to go on to Blaney Meadows.

On the way you will come to the second suspension bridge at the crossing of Piute Creek. This spot marks the boundary of the proposed Roosevelt National Park as delineated in the bill pending in Congress and indorsed by the Sierra Club. To



MARIE LAKE FROM SELDON PASS
Photo by Francis P. Farquhar



CLIMBING SILVER PASS FROM THE SOUTH
Photo by Herbert W. Gleason

anyone who has just passed through the Evolution Creek region it must seem incredible that there could be any delay in coming to the conclusion that it should be included in a national park, for it is superlatively park country of vastly greater value for its scenic wonders and its recreational opportunities than for any commercial uses. I have not mentioned the park heretofore, as this is the first time that we have come upon its proposed boundaries, with the slight exception of the pass between the Kern and the Kings, where the trail runs for a mile or two on the east side of the crest just outside of the boundary-line. Otherwise the whole region from Mount Whitney to the junction of Piute Creek with the South Fork of the San Joaquin is embraced in the limits indorsed by the Sierra Club after years of investigation and consideration.

Blaney Meadows are privately owned, and the rights of the owners should be regarded. There are two hot springs, one private, the other free for public use. You must be sure to time your arrival there for Saturday. The public spring and camping-grounds are on the left (southerly) bank of the stream, which is fordable at this point. The feed is good and there are plenty of fish.

Continuing the journey northward, the trail leaves the meadows about a mile down-stream on the right-hand side and begins to climb abruptly up the side of the cañon. The trail is steep, and last year it was much in need of brushing out. It will be worse next year unless some work is done on it. After a climb of some twenty-five hundred feet hanging meadows begin to appear, and presently you are once again on the top of things, out of the woods and among the "sky parlors." The trail is frequently hard to find because of numerous cattle-paths, for this is a cattle country. When in doubt bear a little to the left and you cannot go far wrong—presently you will come upon a group of little lakes between which the trail winds. One of these is named "Heart Lake" on the map of the United States Geological Survey; nevertheless, a few hundred feet higher, just as you enter upon the final ascent of Seldon Pass, you will find another little lake, barely indicated on the map, which is unmistakably the genuine article.

Seldon Pass (10,800 feet) is the fourth important pass on the northward route from Mount Whitney, the others already crossed being Junction, Granite, and Muir. It is not in natural features the most formidable, that distinction easily resting with Muir Pass, but temporarily at least it is the most difficult for a pack-train. Particularly as you cross Seldon Pass—and, later, Silver Pass—will you grieve that Governor Stephens declined to approve the appropriation last year. You will wish that he were with you—on a wabbly horse.

The trail mounts through a rocky gorge over ledges and talus-piles to a slight depression in the ridge between Mount Senger (12,253 feet), on the right, and Mount Hooper (12,322 feet), on the left. As you reach the crest a new country sweeps into view. Directly below lies Marie Lake, broken into a picturesque pattern by islands and promontories of granite. Beyond is the valley of Bear Creek, dominated on the east by the buttressed masses of Seven Gables (13,066 feet) and Mount Hilgard (13,351 feet). It is a region enticing to the explorer and the mountaineer. Innumerable lakes and peaks lie along the main crest of the Sierra, notably Lake Italy and Mount Abbott (13,736 feet) with its neighbors. No pass has yet been discovered, however, across the Mono Divide, and the route of the John Muir Trail is forced down to lower country by way of Bear Creek and Vermilion Valley.

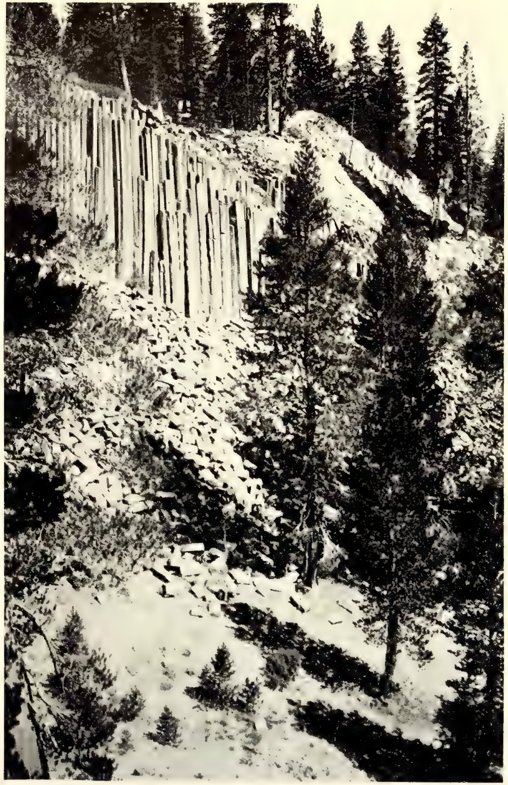
The descent of Seldon Pass to Marie Lake requires careful work by the pack-train leader, but it is only a short distance, and the trail soon comes out on easier terrain. Skirting the western margin to a promontory that nearly cuts the lake in two, the trail there crosses the outlet and declines to the bed of a gully down which flows a stream toward Bear Creek. To the left rises a cliff of a few hundred feet, beyond which on a bench lies Rose Lake, invisible at all times from the trail. The trail continues by easy stages down to the main waters of Bear Creek, where it crosses to the right bank. Cattle-tracks may cause some confusion, but if the general direction is maintained the main trail will soon be picked up. There are some bad places near the crossing of Hilgard Creek, and a watchful eye must be kept on the footing, as there are some slippery passages of "slick" rock. There are several possibilities for camp-sites along Bear Creek, but unless it is planned to wait over a day or so for side-trips to the Lake Italy and Mount Abbott region it is well to keep on a few miles farther. The cañon presently inclines to the west, and soon afterwards the trail leaves the creek and ascends the northern wall leading to Bear Ridge. This is all forested country, lighted by many a garden of brilliant flowers. About six or seven hundred feet of steep climbing will bring you to a particularly luxuriant garden, with excellent feed and a small stream of water. Level beds are scarce, but they can be found, and at any rate the charm of the spot is such as to make comfort a secondary consideration.

The next day presents a choice of objectives. You can camp in Vermilion Valley if you want to and if you can find feed well enough concentrated to hold your stock together. But I think you will prefer to continue up the North Fork of Mono Creek to a higher and wilder country. An alternative is to go to Graveyard Meadows on Cold Creek. This route leads to Silver Pass and the Lake of the Lone Indian, but parts of it are in bad condition, and on the whole it is not nearly so interesting as the Mono Creek route. The latter, moreover, is the official line of the John Muir Trail. From the camp on Bear Ridge the trail ascends a few hundred feet to the crest and then winds down a gradual slope through a fine forest westward and presently southwestward to Vermilion Valley. It is a discouraging trail, for it travels for several miles in precisely the opposite direction from that of your destination. It brings you into the lower end of Vermilion Valley, where there is a general rendezvous of trails from all directions. When you reach the floor of the valley, turn sharply to your right and follow up Mono Creek. Do not stop at any point below the North Fork. Start from Bear Ridge camp early enough so that you will have plenty of time to climb up into the North Fork country. Two or three miles stiff climb above the junction of the North Fork with the main stream of Mono Creek there is a wonderful box cañon, with fine feed and all the elements of a happy camp. As you look back across the cañon of Mono Creek you will be impressed by the fact that after a long day's journey you are not many miles from where you camped the night before. You will scan the southern wall of the cañon with the hope of finding a route for a trail. If you succeed and can demonstrate its feasibility, you will have done a great service, for it is planned to bring the John Muir Trail from Bear Creek over the ridge as close to Volcanic Knob as possible just as soon as a route can be surveyed down into Mono Creek Cañon.

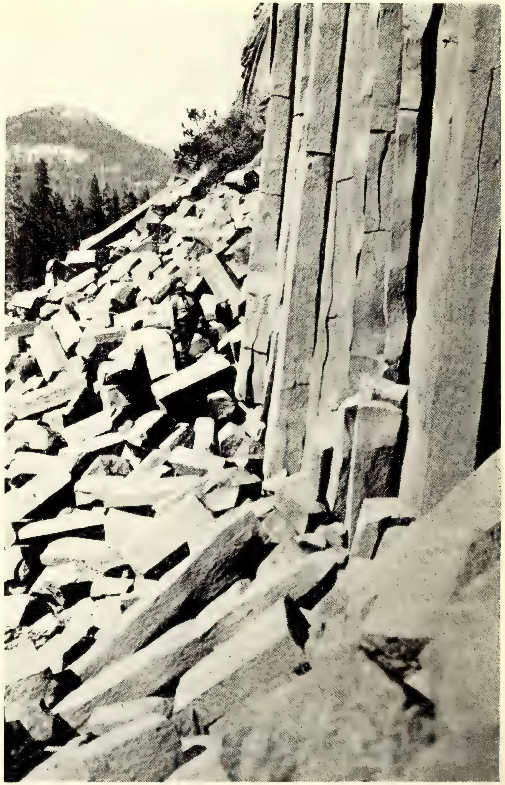
The camp at North Fork of Mono Creek is an excellent base from which to make side-trips into the country toward Red and White Mountain. The Mono Creek region with its four Recesses is also within reach. In fact the only direction that seems closed to further travel is that which is actually the route of your next day's journey. A hundred yards or so above the upper end of the little meadow the trail crosses the stream to the right bank and immediately begins to zigzag up the towering wall to the west. It is not half so bad as it seems, and even if the trail were far steeper and more perilous the effort would be amply repaid by the striking panorama that unfolds with every step. To the southeast Volcanic Knob and to the northeast Red and White Mountain delight the eye, while the vigorous lines of the deep cañon below are enhanced by the foreground of graceful hemlock tops. The ascent terminates very abruptly as the trail emerges upon an unexpected large meadow that presents a remarkable contrast to the rugged country just below. For the next hour one may wander sedately as through the Elysian Fields. Birds and flowers are in abundance and trout flash in the gently flowing stream. Ahead glitter shattered cliffs of white granite.

Keeping on the southwest side of the meadow to its head, the trail there crosses the stream, winds up a series of ledges to the east, and comes out on a barren upland. Here is a nameless lake, the source of the stream that has been the companion of the trail since leaving the cañon. The way lies clear along the east shore of the lake until its head is reached. Then comes the pass. A few minutes' climb brings you to the summit and to a view that will never be forgotten. This pass is not named on the United States Geological Survey map, at least as distinct from Silver Pass, but a sign-board bears the name Goodale Pass. The old trail crosses less than a mile away to the west, coming up from Graveyard Meadows and descending to the Lake of the Lone Indian, and the name Sil-

LAKE OF THE LONE INDIAN
Photo by Herbert W. Gleason



DEVIL'S POSTPILE
Photo by Francis P. Farquhar



DEVIL'S POSTPILE
Photo by Francis P. Farquhar

ver Pass properly belongs to that crossing. But inasmuch as they are so close together and as they both are on the Silver Divide, it is perhaps just as well to include both crossings under the name of Silver Pass. The view is equally inspiring to the north and to the south. Behind are Volcanic Knob, Seven Gables, and, closing the horizon, Seldon Pass. Ahead lies the tremendous cañon of Fish Creek, sweeping in a noble curve, and far beyond stand Mount Ritter and Banner Peak, flanked by the Merced group on the left hand and the boundary peaks of the Yosemite National Park on the right. Thus suddenly comes the realization that the end of the journey is in sight. Yet it is not to be accomplished in a day, nor even two, for it is farther than one would at first suppose.

From Silver Pass (10,700 feet) the trail descends to a series of benches, each with its own little lake, and by successive stages reaches the head of Upper Cascade Valley in Fish Cañon. It is not a smooth trail; in fact, it requires constant attention on the part of both man and beast. In some places it is as steep as a trail can be without qualifying as a ladder. Nevertheless, considering the ruggedness of the country, it is quite surprising that there should be a trail there at all, and its steepness is no discredit to the builders. It can stand improvement, however, and is one of the urgent reasons for continuing the John Muir Trail appropriations.

Camp would ordinarily be made in Lower Cascade Valley. There is everything there to recommend it, provided that the cattle have not devoured all the feed. Last summer Fish Cañon was crowded with cows, and by the time we reached it there was nothing left but starvation rations. In fact, we were forced to continue all the way to Fish Valley, in order to find feed for our beasts, making camp at nine o'clock at night. Presumably, conditions will not be so bad another year, and the traveler may reasonably count on making camp in Cascade Valley. Before leaving the high mountains of the upper Fish Creek region I want to speak of a particularly beautiful peak that towers above the head of the cañon like another Matterhorn. It is of white granite, shattered and splintered at the top. It is the culminating point of a spur that juts out at right angles from the Silver Divide. No one who goes to the head of Fish Cañon can fail to identify it. As far as I have been able to ascertain, it has no name, and I propose that the name Mount Izaak Walton be given to the whole spur, and that the dominating tower at the end be called Piscator Peak. In view of its relation to Fish Cañon, I submit these names as singularly appropriate.

The trail down Fish Cañon is uneventful until at a level of about eight thousand feet it crosses to the left bank of the creek and is forced up the cañon side as the bed of the stream becomes choked between impassable walls. A stiff climb and a corresponding descent on the other side of the ridge away from the creek will bring you to a hot spring. A little farther on the trail emerges into Fish Valley, rejoining the creek. At the lower end of the valley is an excellent meadow, where even in such a season of scarcity as last year there was sufficient feed reserved for saddle and pack animals. If camp has been made in Cascade Valley the preceding night, Fish Valley can be reached by noon. But it is not advisable to proceed farther that day. The fishing is excellent here and it is a good place for resting.

The Devil's Postpile is distant an easy day's journey from Fish Valley. The trail leaves the valley near its lower end and climbs out over a spur of Pumice Butte that enters the angle between Fish Creek and the main stream of the Middle Fork of the San Joaquin River. Continuing northward, the route follows Crater Creek for a way and then surmounts another slight ridge to the west, climbs some more, and finally comes to the main waters of the Middle Fork of the San Joaquin close to Rainbow Falls. Here is one of the treasure-spots of the Sierra, a lacy curtain of shining white water falling some eighty feet over a ledge of black basalt. In form the fall suggests the Vernal in Yosemite, but in surroundings and general character it is unique. About two miles farther is the Devil's Postpile. Here indeed is one of the wonders of the world, not half enough appreciated by the people of the United States. It is one of the three best examples known of the phenomenon of basalt columnar formation. The other two are the Giants' Causeway on the coast of County Antrim, Ireland, and Fingal's Cave on the island of Staffa, Scotland, both famed far and wide in Europe as popular wonders and scientific specimens.

It is decidedly worth while to spend an extra day in the vicinity of the Postpile. Its fascinating columns and many curious aspects deserve careful study. Moreover, in the immediate neighborhood there is a hot spring and a soda spring of the highest quality. Camping is good either at Soda Spring Meadow, or at Reds Meadow, a mile away.

The homestretch now begins. The trail is so well known it hardly needs description. Going north from the Postpile, it passes through Pumice Flat and Agnew Meadows, and then climbs gently up along the east side of the cañon of the Middle Fork of the San Joaquin. And now comes the grand view of the Mount Ritter range—black and white, majestically towering above the cañon.

At the head of the cañon the trail forks, the right-hand branch continuing over Agnew Pass to Gem Lake and Parker Pass, the left-hand winding up to Thousand Island Lake. Yosemite can be reached by way of Parker Pass and the Mono Trail down the Dana Fork to Tuolumne Meadows, but it is a somewhat longer route, and is not the John Muir Trail. There is also another way of reaching Thousand Island Lake from the Devil's Postpile, taking a trail that goes up the west bank of the Middle Fork by way of Shadow Lake and Garnet Lake. Thousand Island Lake is likely to be a chilly camp, for there is not much shelter. Here I must utter my last curse upon the sheep. In the phrase of the Greek mountaineer, "Oh, that they may perish!" Again I say, it is to be either sheep or travelers in our mountains; there cannot be both.

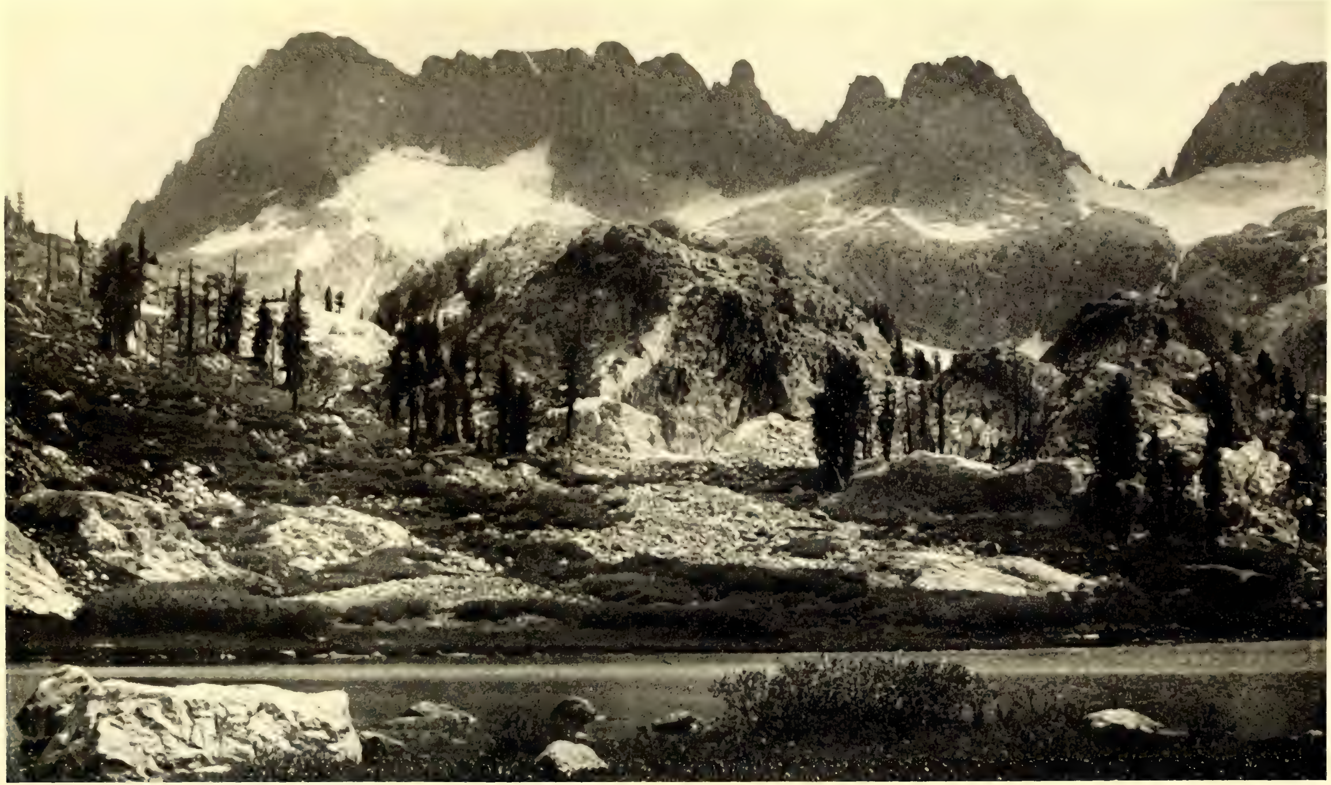
From Thousand Island Lake the trail immediately crosses Island Pass and descends into the basin of Rush Creek. Here for the first time since Junction Pass the John Muir Trail crosses to the east side of the Sierra crest. It is for almost as brief a distance, for after crossing the several sources of the creek the trail climbs to Donohue Pass and descends again to the west side. The trail through Rush Creek Basin is not easy to find in several places, and needs better marking. The upper part of the basin is usually heavily laden with snow, but last season we found it clear even to the summit of the pass. In fact, not once from Kings River Cañon to Yosemite did we cross a patch of snow. This is a condition not likely to occur again for years, even during the month of August. In using this article for a guide, therefore, due allowance should be made for this unusual condition.

Donohue Pass (11,200 feet) marks the boundary of the Yosemite National Park. The trail crosses and recrosses the stream flowing from the glacier of Mount Lyell, descends by well-built grades, and comes out upon the level floor of Lyell Cañon. The journey is practically over. There is no longer any need of a guide; trails are excellent and well marked, camp can be made anywhere, and feed is a hundred times more abundant than anywhere else along the entire route. In our case, we made camp for our last night in the open by the side of the Tioga Road below the Tuolumne Soda Springs. Next day we reached Yosemite by way of Lake Tenaya and Mirror Lake and came to the end of the John Muir Trail.

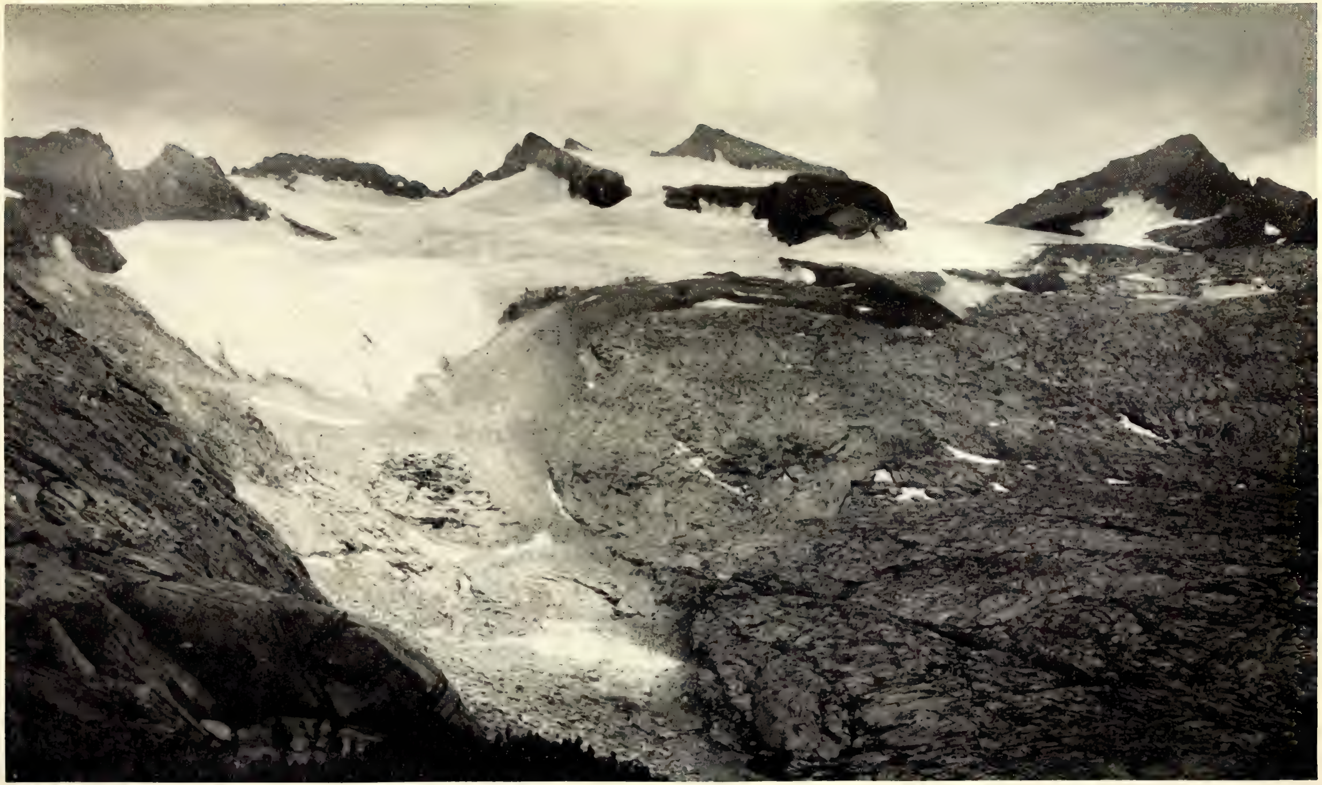
For convenience of the traveler I append a summary of the schedule of our party, among whom were Jesse B. Agnew, of Visalia, California; Allen Chamberlain, of Boston, Massachusetts; Dr. G. Lenox Curtis, of New York City; and Henry H. Saylor, of Huntington, Long Island, New York.

Arrived		Altitude (feet)	Left
Aug. 2	Kings River Cañon	7,645	Aug. 4
" 4	Granite Basin	10,000	" 5
	Granite Pass	11,333	
" 5	Simpson Meadow	6,000	" 6
" 6	Grouse Valley	8,500	" 8
" 8	Le Conte Cañon	10,300	" 9
	Muir Pass	12,059	
" 9	Evolution Creek	9,700	" 10
" 10	Blaney Meadow	7,600	" 11
	Seldon Pass	10,800	
" 11	Bear Ridge	9,400	" 12
" 12	North Fork of Mono Creek	8,800	" 13
	Silver Pass (Goodale Pass)	10,700	
" 13	Fish Valley	6,500	" 15
" 15	Devil's Postpile	7,500	" 16
" 16	Thousand Island Lake	9,850	" 17
	Island Pass	10,473	
	Donohue Pass	11,200	
" 17	Tuolumne Meadows	8,500	" 18
" 18	Yosemite Valley	4,000	" 19

Total—13 traveling days from Kings River Cañon to Yosemite Valley.



THE MINARETS
Photo by William E. Colby



MOUNT LYELL, AUGUST, 1919, SHOWING UNUSUAL RECESSION OF SNOWFIELD
Photo by Francis P. Farquhar

HIGH PLACES OF THE SOUTH

By Francis M. Fultz

THE mountains of southern California do not receive the attention of which they are worthy for their uniqueness and rugged topography, nor due consideration for their alpine character. This situation is largely due to the overshadowing place which the Sierra Nevada holds among the ranges, not only of our Western Slope, but of all temperate North America, and to the no less potent fact that the forest-cover in the south is largely elfin-wood, which suffers much, in popular opinion, in comparison with the giant forests of the north.

In regard to this elfin-wood—otherwise known as *chaparral*—I wish here to remark that it is not the least of California's wonders. It forms the most extensive as well as the most highly developed area of its kind in the world. It is a real forest of real trees, and its presence is an essential factor in the fertility and prosperity of the south. And it takes the loss of a couple of hundred thousand acres, and the consequent denudation of whole watersheds—the result of the recent fires in the San Gabriel Mountains—to arouse people to a realization of this fact! I should like to say something more about this matter right here, but I must go back to my text, "High Places of the South," or I shall not have space for what I have in mind on that subject.

San Antonio, San Gorgonio, San Jacinto, and the mountains adjoining these three culminating peaks are the high places in question. To them the southland looks for its water-supply. While their lesser comrades come in for a share of the work, the three giants are far and away the big factors in the case. The "big three" are all sky-piercing peaks, and the groups which they respectively culminate—the San Gabriel, the San Bernardino, and the San Jacinto mountains—all furnish true alpine conditions.

San Gorgonio is the highest peak in southern California, reaching 11,485 feet. Next in order is San Jacinto, 10,805 feet; then San Antonio, with an altitude of 10,080 feet. The Southern Section of the Sierra Club makes a pilgrimage to at least one of these three peaks every year. The San Antonio outing is either a two- or a three-day trip. Trips to the other two peaks require four days each. All three regions afford ample opportunities for longer and more extended trips, on which the time can be spent with much profit and enjoyment. The club has made one such trip in the back ranges of the San Gabriel Mountains northwest of Mount San Antonio.

The San Gabriel back-ranges afford ideal conditions for summer tramping, especially for trips during June and July. The June conditions there very much resemble what may be found in the High Sierra in late July or in August. The mountains run up to heights above the limit of the chaparral and are clothed with fine stretches of pine and other needle-leaved trees. There the sugar and yellow pines grow to a size approaching that of their Sierra Nevada brothers, and the incense cedars are as fine as can be found anywhere. Great silver firs also abound, while on the higher ridges are lodgepole and limber pines. There are rugged peaks there, too, and deep chasms. From a bold ledge on the east face of North Baldy you may look down into the bed of the San Gabriel River over three thousand feet below, and the abrupt descent of the cañon's wall does not suffer in a comparison with the side of Yosemite's gorge when viewed from Glacier Point. And a gold mine opens out on this selfsame ledge, with a quartz-mill at its mouth! Across the cañon from this view-point stands old San Antonio, which in May, and often until July, is white-capped and cloud-encircled. Few trampers ever reach this view-point, for the trail to it comes in from the desert, following the old mine road, over which for some years now there has been no traffic.

The trip to the summit of San Antonio is considered an easy one. Therefore, in order to throw into it some thrills, it is usually scheduled for some time in the early spring, while a goodly stretch of the trail is still snow-covered. The climb begins from Camp Baldy, from where the usual route to take is the Bear Cañon Trail, by which the ascent is gradual and easy, although to the mountain novitiate it usually seems an up-hill road that has no end. As a rule, most of the party return from the peak by way of the "Devil's Backbone," leaving the summit from the eastern end. This route has thrills of its own, regardless of the season. But even this trail, if we may call it such, does not furnish excitement enough to the more adventuresome ones, who, to satisfy the daredevil spirit that is rampant within them, plunge straight down the mountain side for Camp Baldy, coasting on snow part of the way, slipping with the loose shale on steep slides part of the time, dropping from ledge to ledge in narrow gulches, darting from tree to tree on the steep pine-covered slopes to keep themselves from going headlong, and so on, until they suddenly land on the banks of San Antonio Creek, a mile in vertical depth below. It is hard on shoe-leather, but it furnishes the thrills.

Magnificent is the term which rightly describes the view from the top of Mount San Antonio. Far below on the south lies the Orange Empire, looking the giant landscape that it is, with its checkerboard network of groves and highways drawn in fine detail. On the north is the Mojave Desert stretching away to the eastward until its limits are lost in the haze, and beyond whose northerly edge rise the Tehachapi Mountains, the frayed-out end of the Sierra Nevada. If the atmosphere is clear enough, the Mount Whitney group is plainly discernible. Eastward, the San Bernardino Mountains, with San Gorgonio's old gray head rising from their midst, seem very near at hand; while toward the west the view takes in the jumble of lesser mountains and wider valleys that fill the space between San Antonio and the sea. Offshore stands Catalina, the "Magic Isle."

With all its attractions, however, the Mount San Antonio trip is not altogether satisfying to many of the Sierra Club. The place is too near civilization. The "outlanders" are too numerous. The trail is too crowded. There is no camp-fire, for the night is spent at Camp Baldy. The dance-pavilion is a poor substitute for the night-gathering around the big log fire in the open. There are altogether too many reminders of the daily grind of life. So it is that many of us come away from there with our longings not fully satisfied.

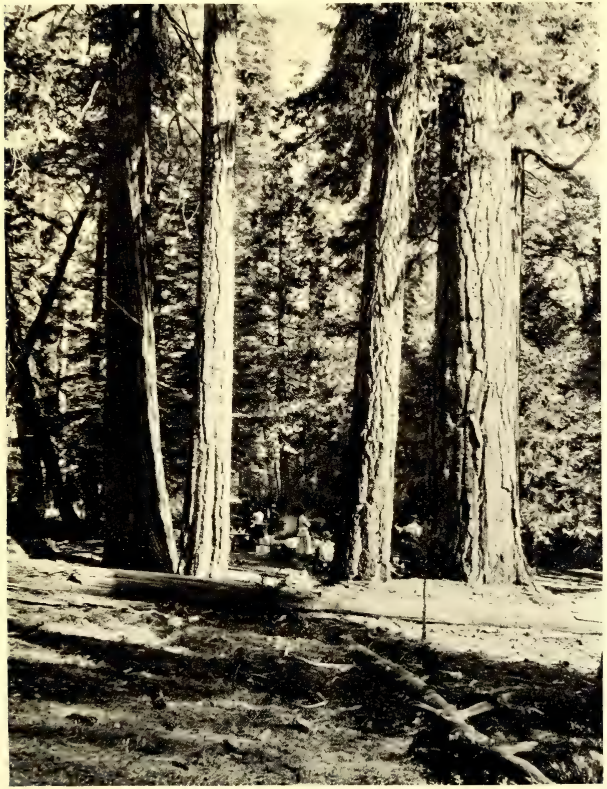
But San Gorgonio and San Jacinto—ah, they are different!

There we get away from the crowd, the automobile, the telephone, and the newspaper. It may be for a few days only—it seems like a *very* few days—but it is *away*. We can forget everything, *do* forget everything many of us, and revel in the joy of being free among the mountains!

On our last trip to San Gorgonio, the club camped two nights at Barton Flats, on the north slope of the mountain, in the upper Santa Ana Valley. The forest there reminds me of the moist woods of the Sierra Nevada. There are great silver firs, immense incense cedars, and sugars and yellow pines in profusion, among which Barton Creek seeks a tortuous course, spreading here and there into separate rills, only to unite again farther down the slope. The spot is a greenery, a fernery, a forest retreat! But I'm afraid it is not for long; an automobile road now runs into its very depths!

The third night was spent at Dry Lake, eight miles nearer the mountain-top than Barton Flats, from which it is reached by an indifferent, elusive trail—indeed, so elusive in places as to allow its would-be followers to wander off through marshy *cienagas,* or to wander along rocky ridges, which nearly all of us proceeded to do, each after his own separate, independent, and self-willed opinion of what was the best way. So in due time—that is to say, from about noon until after nightfall—we all arrived at the camp among the lodgepole pines on the shore of Dry Lake, some three thousand feet below the crown of old San Gorgonio.

When Dry Lake was given its name it no doubt deserved it; but a levee thrown up across its outlet has converted it into a lake in fact as well as in name. Its setting is beautiful, lying as it does at the foot of the last steep rise of San Gorgonio and solidly framed by the forest of lodgepole pines. The long crowning ridge of the mountain rises on the southeast, across the lake from where our camp was located, and the picture it made in the evening glow, with its reflection in the lake, became one of the most vivid and enduring images that are stored away in my memory. Patches of snow on the long gray ridge and the dark-green forest belt at the base furnished contrasts to further enhance the scene. A pink-flowered knotweed, growing in solid masses, covered large patches of the shallower



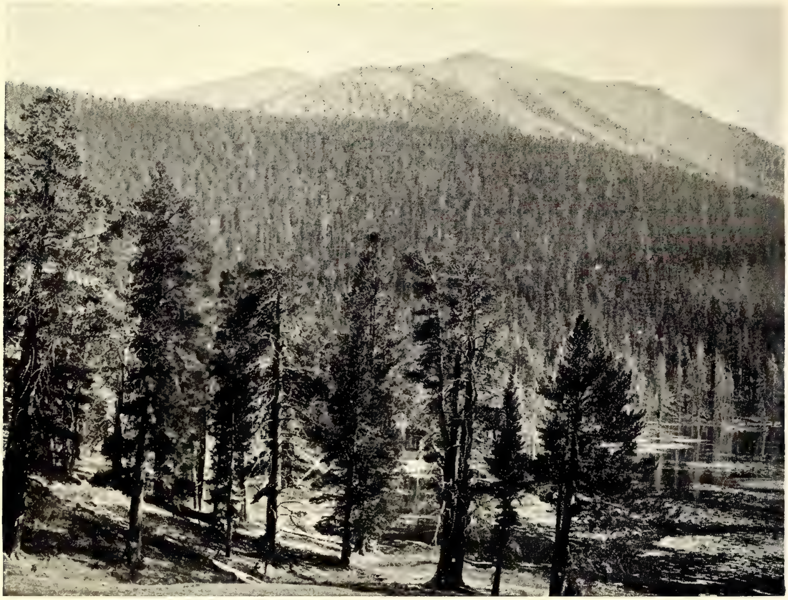
SIERRA CLUB CAMP AMONG THE BIG PINES AT BARTON FLATS, SAN BERNARDINO MOUNTAINS

Photo by F. M. Fultz

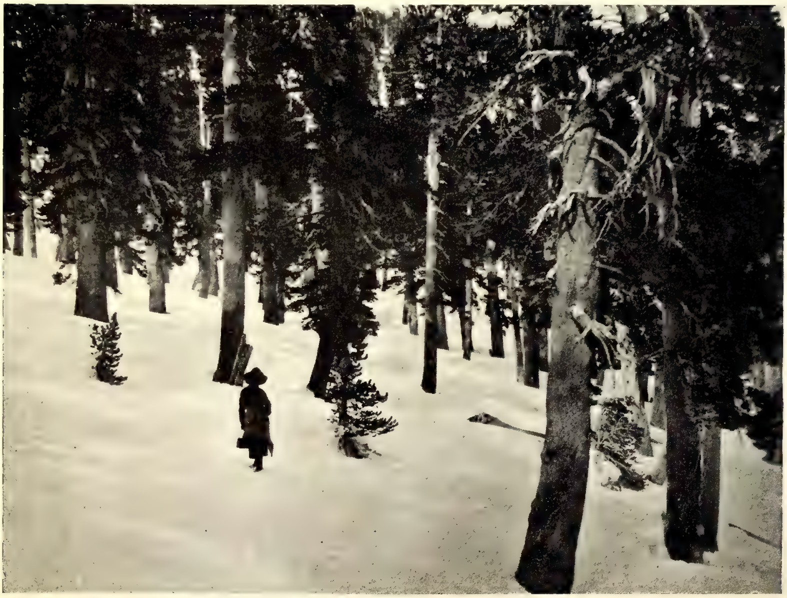
LOOKING ACROSS THE THREE-THOUSAND-FOOT GORGE OF THE UPPER SAN GABRIEL RIVER

Showing Mount San Antonio

Photo by F. M. Fultz



DOG LAKE AND THE BARE RIDGE OF MOUNT SAN GORGONIO
Photo by F. M. Fultz



LODGEPOLE PINE FOREST IN APRIL
On the west slope of Mount San Gorgonio
Photo by F. M. Fultz

parts of the lake and gave to the surface a ruddy tinge, as if the water were reflecting a sunset sky.

There is no trail from Dry Lake to the top of San Gorgonio —only a trace, where someone in the years gone by once passed, leaving behind him an occasional "duck" to guide those who might come after. Most of the way is rough, and much of it so steep that when we tried to stand erect we literally found ourselves staring the slope in the face. The slope, too, was in such a mobile condition that we seemed to slip backward two steps for each one we took forward. But perseverance finally landed us on that long bare ridge which has given the mountain the familiar name of "Grayback." Some say the name came from the color of the ridge, which even from far away always looks cold and gray. Others say it was the shape of the ridge—fancied by some to resemble a certain plebeian insect of ill-repute—that suggested the homely name. As for me, I am poetical enough to pin my faith to the former proposition. But I do not like the use of the name at all. The good old saintly one of San Gorgonio, given by the Spanish a century and a half ago, is of a dignity which carries with it a respect and reverence more in accord with the spirit in which all true mountain-lovers approach the eternal hills.

While I am talking on the use of names, let me put in a plea for old San Antonio also. Let us discourage the use of "Old Baldy," by which this mountain is apt to be called by the general run of persons.

To return to the Sierra Club on San Gorgonio. We descended the mountain by the Vivian Trail, as the Government route to the summit is called. The lower end of this trail is in Mill Creek Cañon, some three miles above Forest Home. Nearly all of the crowd were caught in one of those summer thunderstorms which now and then break around these high mountains of the south. They were thoroughly drenched by the tremendous downpour that lasted for a good part of an hour. When the storm passed and the sky had cleared again, the top of San Gorgonio was a dazzling white, as we viewed it from Forest Home, eight or ten miles away in an air-line. While the club members were getting a terrific drenching on the downward trail, it had been snowing on the summit of the mountain!

On the occasion of another trip to the region, taken early in April, several members of the Sierra Club climbed San Gorgonio by the Vivian Trail when a large part of the way was under snow. They found the weather conditions of wind and snow so severe at the top that it was with the utmost difficulty they made their way along the summit ridge to the cairn at the highest point.

We of the Sierra Club in the south consider the trip to Mount San Jacinto the *ne plus ultra* of our outings. It is one of the hardest—all best things are hardest to obtain—yet the crowd usually numbers about fifty, and the entire trip is almost always made without anyone falling behind. (This statement applies to persons, and not to the pack-train carrying dunnage and commissary, which on one occasion got lost, leaving the crowd supperless and bedless one cold night far up on the mountain—for all the world like an experience I once went through on one of the "big trips" up in the Kern region.) The full account of the trip just parenthetically alluded to would make an interesting article by itself. Here I shall have to forego more than the briefest outline.

The first night's camp was in Strawberry Valley, one of the most beautiful mountain parks in the world, surrounded by a two-thousand-foot mountain wall, bordered and sprinkled over with Coulter pines, and set with a succession of flowers that runs to a glorious finish in the fall with a display of goldenrod and scarlet-hued zauschnerias. The next day we followed the long trail that goes by the way of Tahquitz Peak, then on to the sky-perched valley of the same name. There two or three whispering rills gather, joining their forces in an aster-embroidered mountain meadow where some lover of solitude, in a year now long away in the past, took up a homestead, built a small cabin, and lived the simple life. The early settler has not lived there for many years, and the cabin is now tumbling to its fall; but the little mountain park is still there in its primitive beauty, the asters still sprinkle the meadow, and the murmuring rills still gather for their journey to the desert sands.

Beyond Tahquitz Valley the trail led us through a forest of yellow and sugar pines, incense cedars, and white firs, with very little or no grade for a few miles. Then it started upward, and we began to climb; and the farther we went, the more we climbed. Then it struck a swampy meadow, just for the sake of losing itself, which it promptly did, after the fashion of high mountain trails, and succeeded in leading most of us astray and scattering us over a large area of soft, boggy land that stood half-way on edge along the main ridge which finally culminates in the highest point of San Jacinto. But all things come to an end sometime, even boggy trails, and at length we found ourselves gathered into the night's camp, only an hour or so below the peak.

The peak was climbed early the next morning—by many in time to see the sunrise over the desert. The return trip from the base-camp was by way of Round Valley, which is a mountain-meadow opening in the lodgepole-pine forest; then on past Hidden Lake, stopping there long enough to make the short side-trip to the Lookout, where the wall of the mountain rises sheer from sea-level in the Colorado Desert, over eight thousand feet below. No other lookout ledge, save only at the Grand Cañon of the Colorado, has ever so impressed me.

The last night's camp was still high up on the mountain, near Tahquitz Creek, not far from where it begins its long plunge for the desert. And the last day's tramp was down this same eastern flank, carrying us in a few short hours from the cool, temperate conditions of the high mountain parks to the tropical climate of the sea-level desert.

Southern California has no national park. There is need of one. True, she has an interest in the parks farther up the State, but she needs one within her own borders and for her very own. And she has spots a-plenty still within the Government domain that possess the right conditions for great national playgrounds. Some of these have been put forward at various times for the honor; but to my way of thinking, the most ideal one of them all has never been mentioned in this connection. This one is the San Jacinto Mountains, and I hereby nominate this group, along with a goodly portion of the adjoining desert, for dedication by our Government as a national park.

AN ASCENT OF MOUNT HUMPHREYS

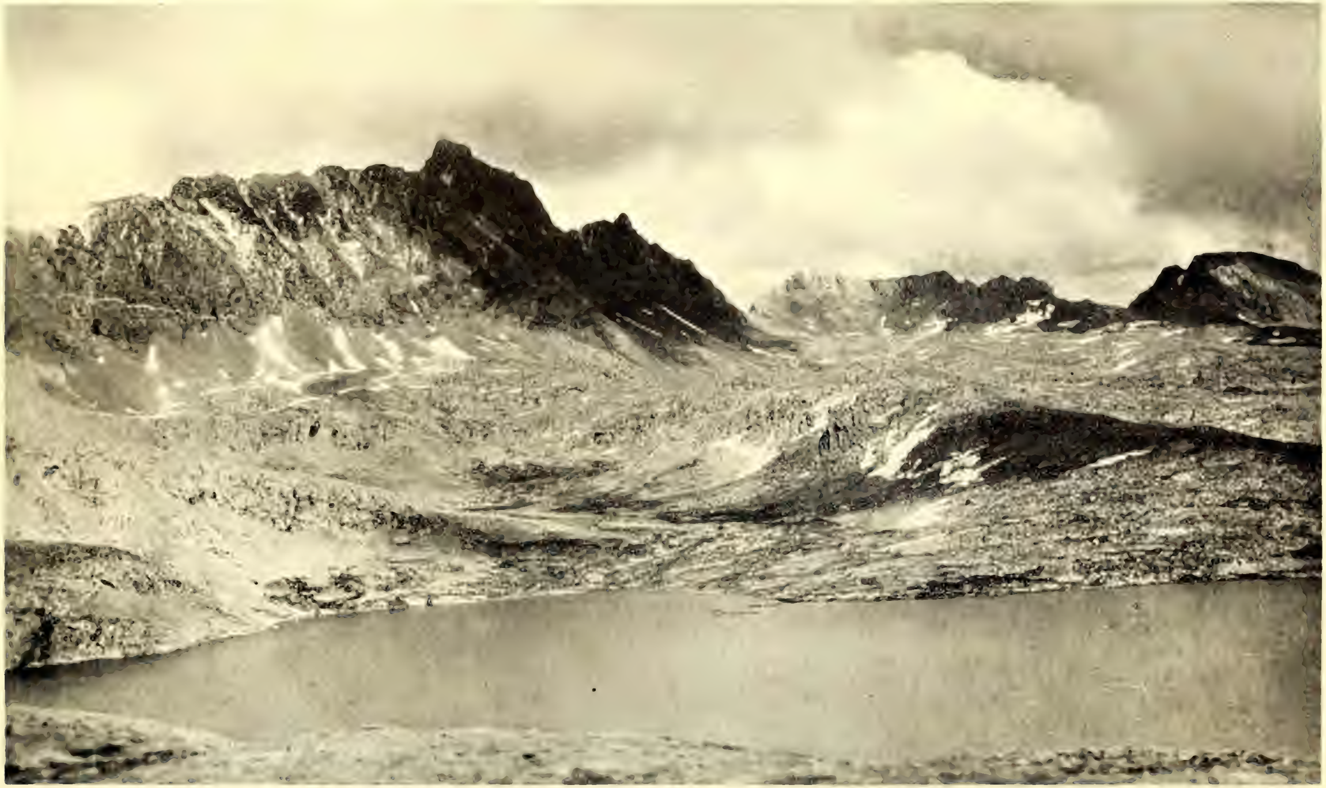
By G. R. Bunn

❧

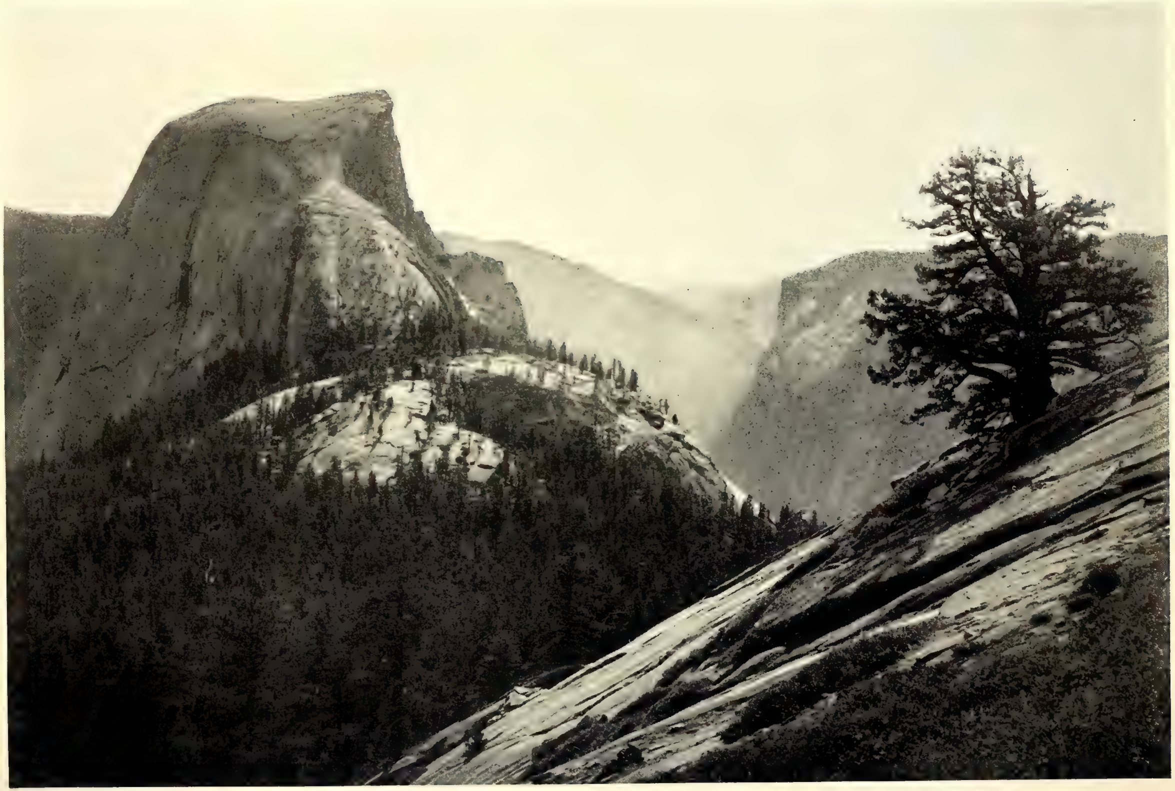
OUR party of ten left Los Angeles July 11, 1919, and on the 14th bade farewell to roads and civilization at the Hogue Ranch, marked on the United States Geological Survey map as Ross Ranch. A little more than two weeks of joyous wanderings, enhanced by good fishing and glorious scenery, found us camped near the timber-line on Piute Creek ready for a dash at our chief objective. In addition to knowledge gained on a trip in 1913 and information from old SIERRA CLUB BULLETINS and other printed matter, we had seized every opportunity to examine our mountain from different vantage-points. There were the distant glimpses from Muir Pass, from Mount Hilgard, and from the unnamed pass between Lake Italy and Granite Park. Then came the more intimate views from Pilot Knob, from the trail near Piute Pass, and from various parts of Humphrey Basin. After collocating all the facts obtained by reading and by personal inspection of our objective, the opinion as to the best line of attack seemed to be unanimous, and when the climbing party left camp on August 3d at 7 A. M., with beautiful weather to encourage them, it was with high hopes that a few hours later the topmost pinnacle of Mount Humphreys would be beneath their feet.

Both the reputation of the mountain and our own visual examination of its tremendous precipices had led us to determine that its ascent was too dangerous to be undertaken by the ladies of the party, no matter how good mountaineers they might be. Viewed in the light of that day's later experiences, it seems certain that this judgment was wise. There were but five of us who finally set out for the conquest of the peak.

An inspection of the United States Geological Survey map will reveal a chain of small lakes lying directly at the base of the main peak, and our route, after crossing a low ridge, led us between the two uppermost of these lakes. Here a fan of talus stretches down nearly to the uppermost lake, and up this we



MOUNT HUMPHREYS AND DESOLATION LAKE
Photo by G. R. Bunn



HALF DOME
Showing the saddle up which the trail leads

took our way toward the apex where it abuts against the foot of the abrupt wall. Luckily, this talus-slope is of comparatively small extent, as on account of its sliding tendencies it is one of the most tiresome and aggravating features of the whole climb. This successfully surmounted, the choice of two lines of advance presented themselves—one, a steep chimney leading all the way to the top of the main ridge; the other, the broken and jagged rocks separating this chimney from another gully more to the left. On account of some previous experience, the writer was chosen to select the route and lead the party from this point. Because of the greater liability of loose and sliding rocks in the course of a chimney and the consequent danger to the climbers in the rear, the more rugged and broken route over the rocks to the left was the one determined upon. From here on, that we might have no difficulty in retracing our line of ascent, we carefully and continuously monumented our route. While the monuments erected were rather hastily constructed, it is probable that enough of them will remain to be of material assistance to anyone who attempts the ascent in 1920.

From the time of leaving the head of the talus-pile to that of reaching the saddle on the main ridge just at the northwest base of the main peak no particular difficulties were encountered. The climbing was rugged and somewhat strenuous, but perfectly feasible to anyone of sound wind and heart and good muscles. No effort was made to follow any particular line or the most direct route. Plenty of time was taken at intervals to rest and enjoy the wild and ever-widening panorama. Some care was taken to choose lines of advance that would mean the least danger to the rear guard from loosened and falling rocks. This caused us to zigzag back and forth across chimneys and over separating ridges of rocks to other chimneys until, at 11:30 A. M., we suddenly emerged from a gully and found ourselves overlooking Owens Valley.

Standing here on the saddle, we found the wind, especially on the side toward Humphrey Basin, to be decidedly chilly; but donning our sweaters we curled up on the sunny side of a rock overlooking the glacier at the head of McGee Creek on the Owens Valley side and ate our lunch in perfect comfort.

The view from the saddle, though exceedingly grand, was somewhat circumscribed by the main peak and the rocky pinnacle which bounded the saddle in the other direction. So, after a short period of rest, we set ourselves to investigate the possibility of ways and means to transport ourselves to the topmost spire, which towered some six or seven hundred feet above us. There, if we could but reach it, we might regale our eyes with an almost unbounded panorama of rugged mountains. At the first sight our chances of reaching the top appeared to be very doubtful. A rocky depression indented the main ridge toward the summit, but this grew rapidly steeper until, as some one said, it was so perpendicular that it leaned over backward. However, that appeared to be our only chance; so we tackled it, hoping to solve each difficulty as it presented itself, and determined not to turn back until we had investigated every possibility. For a little it was easy enough; then the bottom of the depression became a mere crevice and almost perpendicular, and elbows and knees were called into play. A fat man would have surely stuck fast; but as the leader was the heaviest of the party, the others knew if he could wriggle through they could follow. Finally the crevice petered out entirely, and we faced a blank wall of rock with no ledges or crevices to offer holds for feet or hands. However, investigation revealed a slight ledge traversing to the right, which, if successfully negotiated, seemed to lead to further possibilities above. Just here two of the party, who were married men, decided that their responsibilities toward their respective families outweighed their desire to set foot on the topmost pinnacle of Mount Humphreys, and they turned back. Their decision was doubtless wise, as the difficulties rather increased from that point. By the exercise of caution the before-mentioned ledge was safely passed by the leader, only to have new and as difficult problems present themselves at each successive advance. But by traversing again and again on narrow ledges where the missing of a finger-hold or the slip of a foot might mean a permanent resting-place some two thousand feet below; by utilizing cracks and projecting knobs to lift oneself by sheer muscular power; by crawling along knife-edges where it looked equally easy to fall a few thousand feet to the glacier on one side or into a lake even farther below in Humphrey Basin on the other—by these and a few other expedients, as well as keeping a cool head and steady nerves, the last difficulty was overcome, and at 1 P. M. the leader, followed a few moments later by the other two members of the party, set foot on the highest point of Mount Humphreys, 13,972 feet above sea-level.

The weather was calm, beautiful, and warm. There was hardly a cloud in the sky, and sweaters were a superfluity. The view was magnificent. Far across decreasing billows of mountains to westward the San Joaquin Valley shimmered under a hot sun. Near at hand on the other side, apparently just at our feet, Owens Valley lay spread out like a map with its roads, cities, and cultivated fields. Aside from these two features of the scene, the world was a wilderness of mountains. From Banner and Ritter on the north to the helmet shape of Mount Whitney on the south, we identified landmark after landmark, monuments of past successes and beckoning fingerposts to future conquests. Very little snow was visible, owing to the light fall the preceding winter, and even the smallest lakes and ponds were free from ice. Of lakes and lakelets we counted nearly two hundred and then lost count.

The summit of the peak is so limited in extent that there is hardly room for more than a half-dozen people to congregate there at a time without danger of falling off. There is not even room for a monument, and the Sierra Club cylinder lay out in plain sight on a flat rock. One of our first cares was to examine the club register, which we found in fine condition; but it was a matter of surprise to ascertain, according to the entries therein, that the summit had been attained by but one climber since the register was placed there by Messrs. Hutchinson in 1904. This ascent was made in 1917 by a prospector, Dan Samardich. The writer could not but feel a thrill of satisfaction to learn that he was the first club member to set foot on the summit since the register was placed there fifteen years earlier.

One hour was passed on the peak, a few photographs taken, and then with regret we were compelled to set out on our downward way. Excepting the first few hundred feet, which were even more difficult of descent than of ascent, the return trip was uneventful. With the aid of our monuments we made good time in returning, and by 5 P. M. we were at camp.

GROVE KARL GILBERT

By E. C. Andrews, of Sydney, N. S. Wales

THE note presented herewith for the readers of the Sierra Club Bulletin is written by one who was associated intimately with Dr. Gilbert during a period of two months only, but who was associated with him for years by means of correspondence dealing with the subjects of erosion by means of currents, waves, rivers, glaciers, and wind. The note deals in the first place with Gilbert the scientist and in the second place with Gilbert the man.

It is probable in the highest degree that Dr. Gilbert will be placed among the world's greatest geologists and geographers by future workers, if indeed he is not placed there already by geologists. His great success lay in his intimate communion with Nature coupled with his wonderful powers both of observation and reflection. His geological and geographical works show him as one who was continually making sound observations of natural phenomena, making inferences or deductions therefrom, and then checking these inferences by reference to Nature again. In this way he advanced through inference and hypothesis toward Truth.

His methods were much like those of Darwin, the patient yet brilliant observer, the one who sought facts rather than sensational novelties. His quest was Truth first and Truth last. Fame and position counted little with him compared with exactness of observation and deduction. There were twenty-four hours in the day only. He chose God before Mammon.

John Muir was another grand student of Nature. In his case, however, the reflective faculty was not so evident as in the case of Gilbert; the temperament was more sentimental, perhaps more spiritual, the imagination was more poetical, less disciplined than Gilbert's. Each, however, was a master; each was a lover of Nature; each found the truth in his own way; the one felt the unity of Nature; the other sought to co-ordinate natural phenomena.

Dr. Gilbert was the first to announce the fact that many fire-rocks had ascended from hearths or centers beneath the earth's surface and had forced themselves between sheets of rocks separated by a zone of relative weakness. As the rock-sheets were forced apart differentially by the ascending column of molten rock, the latter occupied the space so formed and took on the form of huge lenses, to which Gilbert gave the name of laccolites, or laccoliths, meaning *lake rocks.* These he saw first in the Henry Mountains. Gilbert became famous in England by reason of this discovery; but to the writer he confided the belief that Englishmen praised him for very little, inasmuch as "the laccolite was there," said he, "for the seeing." He it was, also, who appreciated first the fact that areas such as the high Wasatch Plateau, or Range, near Provo, and the relatively low plain around Salt Lake, had formed a continuous surface at one time, but were now broken or "faulted" blocks, one portion of the plateau or plain sinking and the other rising, or both rising, but one to a greater altitude than the other. This enormous "Wasatch Fault" he actually understood from a mere glimpse out of a window of the transcontinental train. This led to his principle of the physiographical criteria of faulting. Later on he was enabled to prove the fault origin of the plateau from physiographical considerations.

As with the laccolite theory, so also with the idea of the "Physiographic Fault"; Gilbert thought it was an easy thing to understand. To which the writer responded: "It is a strange thing that, of all the geologists who had seen the laccolites, and who had traveled in the transcontinental trains, no one had understood these things until Gilbert announced them!" It is also true that years afterward Gilbert had difficulty in making European geologists see these "faults," even when he had shown them the criteria of faulting on the *spot.* At the present time, however, his work on faults of this type is universally accepted by scientists of eminence.

A great principle enunciated by Gilbert in 1882-1888 was that concerning the action of streams and waves. He showed that streams and waves accomplish most of their cutting or erosive work during violent floods or storms. This point had not been understood before, although certain great hydraulic engineers had hinted at the idea, but only in an uncertain way. In letters to the writer Gilbert considered that "all great engineers had a sort of intuitive knowledge of the principle."

In 1898 Gilbert accompanied the Harriman Expedition to Alaska, and there he appreciated the action of glaciers in excavating the peculiar land forms known as fiords, sounds, *cwms* (coombs), cirques, corries, overdeepened lake basins, and U-shaped valleys in cross section. Although he had come to this idea quite independently, nevertheless Henry Gannett had already in 1898-1899 announced the principle, while W. M. Davis and others had also appreciated the facts independently, from a study of Norway, New Zealand, and other places, between 1899 and 1902.

Gilbert also made valuable contributions to the theory of isostasy, first announced by C. E. Dutton—namely, that unit cylinders of earth material, considered at right angles to the earth's surface, whether in the high mountains or in the deep oceanic areas, are approximately equal in weight down to a depth which is approximately one hundred miles below the earth's surface.

But his greatest work is his "Analysis of Land Sculpture," in which he gives a clear statement of the manner in which the weather and the streams combine to carve the lands into the shapes as we see them now, whether as fretted alpine peak, as scarred volcanic pile, as deeply dissected plateau or rolling upland, as foothill slopes, or as coastal or inland plain of accumulation.

This is a masterpiece, a classic, like Hutton's work and Playfair's "Illustrations." It is only fair to state here that Hutton and Playfair, about one hundred and twenty years ago, had evolved a similar scheme. They lived before their time, and their classics lay unheeded in libraries almost inaccessible to workers. Gilbert rediscovered their principles and went beyond them. Later, upon learning of their work, his modesty led him to award Hutton most of the credit. Naturally, Gilbert was a great admirer of Hutton, and could never understand why the Englishmen had neglected their great compatriots.

During recent years Gilbert had made a detailed and valuable study of the action and transporting power of streams generally, with specific applications to the question of damage done by hydraulic sluicing in California.

His works will live long after him, because, like Darwin, he aimed at the truth and nothing but the truth, and was not to be drawn aside by a premature announcement of something novel and startling. Every new idea was mercilessly checked by later observation and forced to agree with its context.

His love and admiration for Darwin, Huxley, Tyndall, Hutton, Playfair, Faraday, and other great Englishmen, and his avowed admiration of the charming style of English writing and clearness of thought exemplified in the works of these masters illustrates the type of man here considered.

As a boy Gilbert was not at all robust, and, according to his statement to the writer, he scarcely, if ever indeed, attended school on that account. His father, desirous of his mental development, gave him the following problem to solve: "A loaf is in the form of a hemisphere, and the crust is of uniform thickness, the volume of the crust being equal to that of the crumb. What are the relative thicknesses of the crust and the crumb?" The boy solved the problem unaided, and his father forecast that he might be of use in the world after all!

Dr. Gilbert was a big-hearted man, and he made a hobby of assisting lads of intellectual promise to receive a good education. He was always on the look-out, however, for signs of strength or weakness of character in such students, in his friends and acquaintance. Thus one day, when an acquaintance made a tremendous and resonant sneeze in his company, he exclaimed: "Bravo! I have waited long to understand whether he really had elements of greatness in him. He has sneezed greatly. I am satisfied. He will do something of great use yet!"

He was extremely sensitive despite his grandeur of character. He hated to be saluted familiarly as "Doc" or even as "Doctor." At Shaver, the lumber camp beyond Fresno, our party stayed for two days awaiting the mule-teams from Yosemite and Calaveras way. Gilbert was leader. An oily-faced individual showed us our rooms in a shack, and then said, "I'll thank you, Doc, for a half for the bed!" The half was paid.

Next morning, we all filed in, with about fifty workmen, to the breakfast table. "How much is the meal?" said Dr. Gilbert to the same oily one in charge at the door. "A quarter, Doc!" said the oily one. "Here it is," said the Doctor. "Oh! no, Doc," said the proprietor; "after the meal will do. I am at the door, but I dashed well can't sit up all night at each window and door of the shack looking for flitters!" Gilbert pressed his point. The proprietor was obdurate. He took money *after* the meal; not for anyone would he change the rule. Several Chinamen waited upon us at table. We had plenty of food—mush, milk, fish, meat, cheese, jam, puddings, sugar, tea, coffee—but only one plate, one knife, one fork, one spoon, and one cup, of very great thickness, without a handle, for each man. "They have these cups so thick and without handles," whispered Gilbert, "so that they can be washed with a hose, or be used as missiles in a fight across the table."

Gilbert was hard of hearing on the starboard side, and the oily one, standing at his port side, told us there was only "one man, one plate," as that was the Chinese law at Shaver. Gilbert did not hear this and helped himself plentifully to mush, sugar, and milk, ate only a little, and then asked the silent Chinese boy to bring a clean plate for meat. There was instantly a chattering among the Chinese. A man had dared to ask for another plate! The writer scented trouble. Gilbert, like Oliver Twist, still asked for more. Not a man looked across the table at us. The oily one came and whispered mysteriously in his port ear: "Doc, this is as much as my job is worth. The Chinks won't serve two plates. Don't ask for one. If you get it, *all* the boys will want one, and then *all* the Chinks will go. Do you get me?" "I don't know what you are saying," said Dr. Gilbert, "but I want you to hurry up with a plate." There was great consternation now, but I said: "He says there will be a clear out if you persist in asking for more plates. The Chinese don't stand for two plates." "Oh! why does he not speak up? Pass the meat"—and into the thick mass of mush and milk he emptied the fried meat and never mentioned the matter again. He was very much upset, however, at being beaten twice by the oily one and at being greeted familiarly as "Doc" into the bargain.

His loyalty to his friends and to his work was an inspiration to all those who had the privilege of living and working with him. Night after night after Matcho the mule, and leader of the pack-team, had been tethered so as to avoid disaster among the team from the dreaded loco-weed, Gilbert would have the pine logs piled high, and in the blaze therefrom he would read to us stories of Clarence King. He would tell us of "Fossil Eye" Walcott, of Shaler, and of others. He admired Shaler for his personality. "Shaler," said he, "was fond of dichotomous classifications. Thus in one of our trips together we came to a common sort of public house in the country. A large and fierce dog came straight at us. In the fraction of time while the ferocious animal was rushing at us Shaler said, 'All men belong to two classes—namely, men whom dogs bite and men whom dogs don't bite. I belong to the smaller group.' He thereupon called to the beast, which at once fawned upon him! As we washed our hands in the common bowl at the same public house Shaler noticed a dirty roller-towel doing duty for all comers. 'Gilbert,' said he, 'there are two kinds of men, men who wipe on the outside of the towel and men who wipe on the inside. I belong to the minority group—namely, those who wipe on the inside.'"

Willard D. Johnson was one of our party on the Sierran trip of July, August, and September, 1908. Gilbert was a staunch friend of Johnson's, and he declared that Johnson was one of the keenest intellects and one of the finest natures that he had ever known. In a letter to the writer in February, 1918, shortly before his death, Gilbert set out briefly the facts of Johnson's sad case of sickness and death, and straightway stated his opinion of Johnson's great worth both as geologist, and as a *man*.

Johnson revered Gilbert, but confided to the writer his fears that Gilbert thought of him only as a child or boy. "As a youth I followed Gilbert into the field without instruments," he said. "Gilbert gave me a task of geological surveying. I explained that I was without instruments. 'Make them,' said Gilbert. And I had to do so."

Gilbert had a deep affection also for the Le Contes. In the Yosemite he spoke of Le Conte and of Whitney, and throughout the San Joaquin trip he showed the younger Le Conte's "monumented trails" with great affection.

Gilbert's pastimes were mainly intellectual. Night and day on the Sierran trip he was continuously indulging in intellectual exercises, except when reading of King's exploits, or telling of Muir in the Sierra and in Alaska, of Harriman in Alaska, or of Wheeler, Dutton, Walcott, Shaler, Davis, and others.

He taught the writer the name of every tree and of every flowering plant in the Sierra seen during the trip. . . . How he praised the writer for seeing *Salix arctica* first in catkin near the Mono Pass, with the plant a quarter of an inch high only, and the catkin two to three inches high! How he made the writer creep along cautiously so as to show him the water-ouzel, the woodpecker, the coyote, the cougar, and the other denizens of the forest and the glacial lakes! On the trip to Wawona and the giant trees he searched long to find the web of the spider which forms its home in the shape of a paraboloid of revolution.

Yet with all his love for plants he told the writer that systematic botany did not appear to broaden the mind so much as the study of physics, chemistry, and engineering. "Where are the names in botany such as Kelvin, J. J. Thomson, Newton, d'Alembert, Galileo, and so on?" To which I answered, "What about Darwin, Huxley, Asa Gray, Bentham, Hooker?" "Yes," he said, "they were great men because they wrote on the geographical distribution of plants, not so much because they were systematists." In all his work one could see the mind working like that of Powell, always dealing with the massive, the sublime.

If a horse or mule fell out on the trip, or a halt were made for a meal, Gilbert would ask at once for a "problem" to be given him to solve. The writer's stock of questions on maxima and minima, on astronomy, on motion round curves, on inertia, on flywheels, on nodes of curves, on physics, were soon used up, as Gilbert could see through a problem very quickly. In return he would always propound a difficult problem, such as that of the loaf mentioned earlier, of the ages of Mary and Ann, etc. At night, in the sleeping-bags, he would teach us the names of all the principal stars, constellations, and so on.

When riding along through the forest, we continually had recourse to a game of his proposing. Thus Gilbert would say a piece of poetry, from the classics, nursery rhymes, or from his own imagination. He would stop at any word, whereupon the writer was supposed to say another poem, or fragment of poem, commencing with the word last mentioned.

Thus the writer had been eating one meal only a day, and taking a course of pepsin for gastritis upon the commencement of the Sierran trip. The trip soon caused the three-meal plan to be revived. Dr. Gilbert noted the change and said:

"An antipodal Fletcherite faster,
Of appetite proudly the master,
Hiked and scrambled for weeks
Amid cañons and peaks,
And now at his meals he's a laster.
Yes, he sticks to his seat like a plaster,
But . . . "

Here the writer had to continue and said:

"But takes pepsin to ward off disaster."

This, of course, was not what Dr. Gilbert had expected, but it amused him very much.

One fragment which the writer worked off in turn on the Doctor may not be out of place here: . . . "like flowers in the scented grove," said the Doctor, stopping abruptly. Then the writer responded:

"Grove Gilbert was our captain bold
Of Henry Mountain fame.
He lit his torch with lac-o-lite,
And straightway made his name!
His many "Faults" were mighty ones,
No common, garden brand.
His Wasatch "slip" in Mormon land
Is known on every hand."

In February, 1918, Dr. Gilbert wrote to the writer concerning his desire to do "something which might assist the cause of the Allies," but he regretted his inability to do anything "of value." He therefore proposed to keep on with scientific work which might be of value in post-war adjustments.

This was near the end. In 1908 he had told the writer that he could not expect to live more than ten years, because of some forecast by an eminent man as to seventy-five years being his limit of age. It came as no surprise to hear that this master in the realm of geology and physiography, this teacher revered and beloved by his disciples, this man of the broad sympathies and of the great heart, had passed away shortly after believing that at a time when his maximum effort was needed in the cause of humanity he had passed his zenith and had entered instead upon his days of "splendid decadence."

Geological Survey, Department of Mines,
Sydney, N. S. W.

The mind opens with the enlarging day.
It is said the sand-hills of the desert under the noon-
day sun emit strange sounds; that the rocky valleys are vocal;
the primeval forest speaks in its depths; hollow ocean sends
a muttering to the becalmed vessel; and up in the
mountains the bound words are set loose. Of
old times the huntsmen in our own woods
met the noon-day spirit under
the leafy canopy.

RICHARD JEFFERIES

STUDIES IN THE SIERRA*

BY JOHN MUIR

NO. VI.—FORMATION OF SOILS

NATURE has plowed the Sierra flanks more than a mile deep through lava, slate, and granite, thus giving rise to a most lavish abundance of fruitful soils. The various methods of detachment of soil-fragments from the solid rocks have been already considered in the foregoing studies on glacial and post-glacial denudation. It now remains to study the formation of the variously eroded fragments into beds available for the uses of vegetable life.

If all the soils that now mantle the Sierra flanks were spread out in one sheet of uniform thickness, it would measure only a few feet in depth, and its entire removal would not appreciably affect the configuration of any portion of the range. The largest beds rarely exceed a hundred feet in average thickness, and a very considerable proportion of the whole surface is naked. But we have seen that glaciers alone have ground the west flank of the range into soil to a depth of more than a mile, without taking into account the work of other soil-producing agents, as rains, avalanches, torrents, earthquakes, etc. It appears, therefore, that not the one-thousandth part of the whole quantity of soil eroded from the range since the beginning of the glacial epoch is now left upon its flanks.

The cause of this comparative scantiness of the Sierra soil-beds will be readily apprehended when we reflect that the glacier, which is the chief soil-producing agent, no sooner detaches a soil-fragment than it begins to carry it away. During the long glacial winter, soil-material was poured from the range as from a fountain, borne outward by the mighty currents of the ice-sheet to be deposited in its terminal moraines. The only one of these ancient ice-sheet moraines which has re-

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*Reprinted from the *Overland Monthly* of December, 1874. The author's revisions and corrections have been incorporated from a copy of the article found among his papers.—THE EDITORS.

tained its principal characteristics unaltered down to the present time is that magnificent belt of soil upon which all the majestic forests of the Sierra are growing. It stretches along the west flank of the range like a smooth-flowing ribbon, waving compliantly up and down over a thousand hills and hollows, at an elevation of from four to seven thousand feet above the level of the sea. In some places it is more than a hundred feet deep and twenty miles wide, but it is irregular as a sun-wasted snow-wreath both in width and in depth, on account of the configuration of the surface upon which it rests, and the varying thickness and declivity of the ice-sheet at the period of its deposition. The long weathering and the multitude of storm-washings to which it has been subjected have made its outlines still more indefinite and variable. Furthermore, its continuity is interrupted at intervals of fifteen or twenty miles by the river cañons which cross it nearly at right angles. For, at the period of the deposition of the main soil-belt as a terminal moraine of the ice-sheet, long finger-like glaciers extended down every one of these cañons, thus effectually preventing the continuance of the main terminal moraine across the cañon channels.

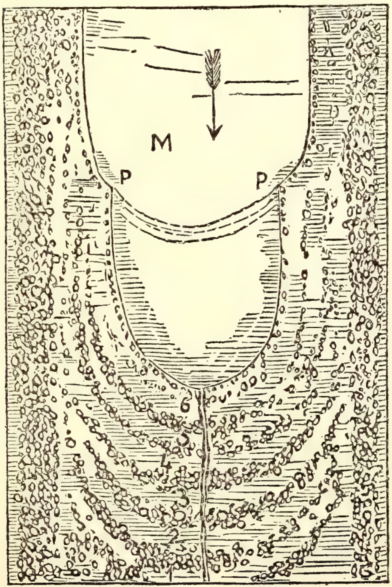

Fig. 1.

The method of the deposition of broad belts of terminal-moraine soil will be made plain by reference to Figure 1, which represents a deposit of this kind lying at the foot of Moraine Lake, made by the Bloody Cañon glacier in its recession toward the period of its extinction. A A are the main lateral moraines extending from the jaws of the cañon out into the Mono Plain; 1, 2, 3, 4, 5, 6 are concentric belts of terminal-moraine soil deposited by the glacier in its retreat.

These soil-belts, or furrows, are twenty or thirty yards apart. After belt number 1 was laid down, the glacier evidently withdrew at a faster rate, until a change of climate as regards heat or cold, or the occurrence of a cluster of snowier years, checked its backward motion sufficiently to afford it time to deposit belt number 2, and so on; the speed of the dying glacier's retreat being increased and diminished in rhythmic alternations of frost and thaw, sunshine and snow, all of which found beautiful and enduring expression in its ridged moraines. The promontories P P are portions of a terminal soil-belt, part of which is covered by the lake.

Similar fields of corrugated moraine matter occur farther down, marking lingering and fluctuating periods in the recession of the glacier similar to the series we have been studying. Now, it is evident that if, instead of thus dying a lingering death, the glacier had melted suddenly while it extended into the Mono plain, these wide soil-fields could not have been made. Neither could the grand soil-belt of the western flank have existed if the ice-sheet had melted in one immense thaw while it extended as a seamless mantle over all the western flank. Fortunately for Sierra vegetation and the life dependent upon it, this was not the case; instead of disappearing suddenly, like a sun-stricken cloud, it withdrew from the base of the great soil-belt upward, in that magnificently deliberate way so characteristic of nature—adding belt to belt in beautiful order over lofty plateaus and rolling hills and valleys, wherever soil could be made to lie.

Winds and rains, acting throughout the ample centuries, smooth rough glacial soils like harrows and rollers. But this culture is carried on at an infinitely slow rate, as we measure time. Comparing the several moraine-fields of Bloody Cañon, we observe that the ridged concentric structure (Fig. 1) becomes gradually less distinct the farther we proceed out into the plain, just as the plow-ridges in a farmer's field become less distinct the more they are harrowed. Now, the difference in time between the deposition of contiguous moraine-fields in Bloody Cañon is probably thousands of years, yet the difference as regards smoothness and freshness of aspect corresponding to this difference in time is in some instances scarcely discernible. In the field represented in Figure 1 these leveling operations may be studied to excellent advantage. The furrows between the several ridges are leisurely filled up by the inblowing and washing of leaves and the finer material of the adjacent ridges. As the weathering of the surface boulders goes on, the crumbling material which falls from them collects about their bases, thus tending to bury them, and produce that smoothness of surface which characterizes all the more ancient moraine-fields of the Sierra. The great forest soil-belt of the west flank has not been hitherto recognized as a moraine at all, because not only is it so immensely extended that general views of it can not be easily obtained, but it has been weathered until the greater portion of its surface presents as smooth an appearance as a farmer's wheat-field.

It may be urged against the morainal origin of the forest belt that its sections exposed by freshet streams present a quite different appearance from similar sections of more recent moraine-beds unmistakably such; but careful inspection shows the same gradual transition from the boulder roughness of the one to the crumbled earthiness of the other that we have already traced between the superficial roughness and smoothness of moraines according to age.

Under certain conditions moraine boulders decompose more rapidly beneath than upon the surface. Almost every section of the forest belt presents specimens in every stage of decay, and, because those that are water-rounded and polished are more enduring than others, they occur in comparatively greater abundance as the soil becomes more ancient. The position of the soil-belt is given in the ideal cross-section of the range (Fig. 2)|. *Its upper limit nearly coincides with the edge of a comparatively level bench,* A B, *extending back to the summit peaks.* Upon this lofty, gently inclined bed the waning ice-sheet lay nearly motionless, shallowing simultaneously across its whole breadth, and finally broke up into distinct ice-streams which occupied the present river cañons. These have left their lateral moraines in the form of long branching ridges of soil, several miles apart, extending from the summit ice-wombs down to the main soil-belt, into which they blend and disappear. But if the ice-sheet had maintained its continuity to the very end of the glacial epoch, soil would evidently have been laid down in one continuous bed all the way back to the summit, because under these conditions every portion of the surface in succession would have been loaded with terminal moraine-belts pressed one against the other like plow-ridges. Under the conditions which prevailed toward the close of the great winter, the separate glaciers as well as the ice-sheet shallowed, became torpid, and died away simultaneously throughout all this upper region; no terminal moraines are therefore to be met until we reach those of the small residual glaciers which took shelter in the loftiest and coolest shadows of the summit peaks.

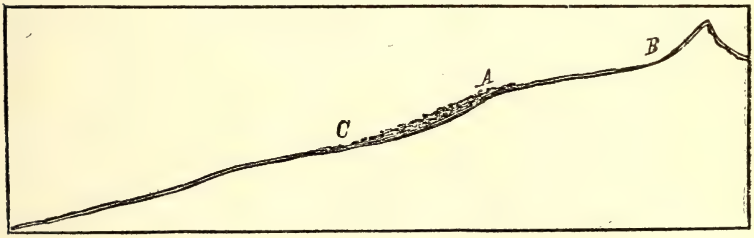

Fig. 2.

Nor will this state of things be wondered at, when we consider how slight is the difference in elevation, and consequently in climate, between the upper and lower limits (A and B, Fig. 2) of this bare alpine bench, as compared with that of the slope (C A) beneath it, upon which the soil-belt lies.

The effect of shadows in determining the formation, size, and distribution of glacial soil-beds must not be overlooked. When the seasons grew warm and the long crooked glaciers were driven from the sun-beaten summit bench, thousands of small residual glaciers, from half a mile to two or three miles in length, lingered on through many a century in the shelter of frosty shadows. Accordingly, we find the moraines of these hiding glaciers in the highest and coolest recesses, shaped and measured with strict reference to their adjacent shadows. A considerable number of these interesting shadow-moraines are still in process of formation, presenting a raw and rubbish-like appearance, as if the boulders, mud, and sand of which they are composed had been newly mined from the mountain's flank, and dumped loosely from a car. Ancient shadow-moraines, delightfully gardened and forested, occur in all deep Yosemitic cañons trending in an east and west direction; but their first forms are so heavily obscured by thousands of years of weathering that their shadow-glacial origin would scarcely be suspected.

In addition to these broad zones and fields and regularly deposited moraine ridges, glacial soil occurs in isolated strips and patches upon the wildest and most unlikely places—aloft on jutting crags, and along narrow horizontal benches ranged one above another, on sheer-fronted precipices, wherever the strong and gentle glaciers could get a boulder to lie. To these inaccessible soil-beds companies of pines and alp-loving flowers have found their way, and formed themselves into waving fringes and rosettes, whose beauty is strikingly relieved upon the massive ice-sculptured walls.

Nothing in the history of glacial soil-beds seems more remarkable than their durability in the forms in which they were first laid down. The wild violence of mountain storms would lead one to fancy that every moraine would be swept from plateau and ridge in less than a dozen seasons, yet we find those of the upper half of the range scarcely altered by the tear and wear of thousands of years. Those of the lower half are far more ancient, and their material has evidently been shifted and reformed until their original characteristics are almost entirely lost.

These fresh glacier-formed soils are subject to modifications of various kinds. After the coarse, unbolted moraine soils derived from granite, slate, and lava have been well watered and snow-pressed, they are admirably adapted for the ordinary food and anchorage of coniferous trees, but further manipulation is required to fit them for special grove and garden purposes. The first and most general action to which they are subjected is that of slow atmospheric decomposition, which mellows and smooths them for the reception of blooming robes of undershrubs and grasses, and up to a certain point augments their capacity for the support of pines and firs. Streams of rain and melting snow rank next in importance as modifiers of glacial soils. Powerful torrents waste and change the most compact beds with great rapidity, but the work done by small rain-currents and low-voiced brooks is very much less than is vaguely supposed. The brook which drains the south flank of the Clouds' Rest ridge, above Yosemite Valley, in making its way southward to join the Nevada Creek, is deflected to the west by the right lateral moraine of the ancient Nevada glacier, and compelled to creep and feel its way along the outside of the moraine as far as to where it is caught between the moraine and an escarpment which advances from the Clouds' Rest crest. When halted here, it spread into a pool, and rose until it was able to effect its escape over the lowest portion of the barrier. Now, this stream, which in ordinary stages is about five feet wide and a foot deep, seems to have flowed unfailingly in one channel throughout all the long post-glacial centuries, but the only erosion the moraine has suffered is the removal of sand, mud, and some of the smaller boulders, while the large stones, jammed into a kind of wall, are merely polished by the friction of the stream, and bid fair to last tens of thousands of years. The permanence of soils depends more upon their position and mechanical structure than upon their composition. Coarse porous moraine matter permits rains and melting snows to percolate unimpeded, while muddy and impermeable beds are washed and wasted on the surface.

Snow avalanches more resemble glaciers in their methods of soil formation and distribution than any other of the post-glacial agents. The century avalanche sweeps down all the trees that chance to stand in its path, together with soils of every kind, mixing all together without reference to the size of their component fragments. Most of the uprooted trees are deposited in lateral windrows, heads downward, piled upon each other, and tucked snugly in alongside the clearing; while a few are carried down into the valley on the snout of the avalanche, and deposited with stones, leaves, and burs, in a kind of terminal moraine.

The soil accumulations of annual avalanches are still more moraine-like in form, and frequently attain a depth of from forty to fifty feet. They are composed of mud, sand, coarse granules, and rough angular blocks, avalanched from the mountain side, and sometimes water-washed pebbles also, derived from the channels of streams.

Thus, the largest of the Clouds' Rest avalanches, in rushing down their magnificent pathway of nearly a mile in vertical depth, on their arrival at the Tenaya Creek (Fig. 3) dash across its channel and up the opposite bank to a height of more than a hundred feet, pushing all the pebbles and boulders of the stream up with them. Spring freshets bring down a fresh supply of pebbles and boulders from year to year, which the avalanches patiently add to their moraine, until in a few thousand years these washed pebbles form a considerable proportion of the mass. Trees over a hundred years old occur upon the upper portions of some of these avalanche-beds, showing that no avalanche of sufficient power to disturb them had occurred since they began to grow. The lower portions of these beds are, on the contrary, in a raw formative condition, and about as plantless as the shining boulder-beds in the bottoms of rivers.

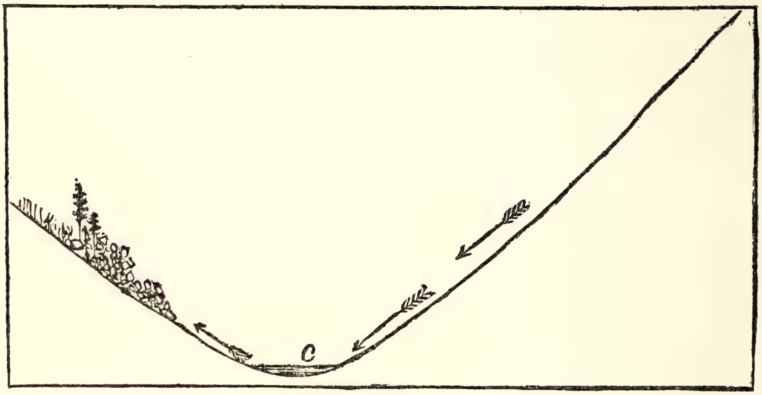

Fig. 3.

Again, stone avalanches have their share in depositing soil. The observer among beetling Yosemitic cliffs occasionally sees a single boulder eight or ten feet in diameter whizzing down the sky like a comet with a tail of dust two thousand feet long. When these huge soil-grains strike among other boulders at the end of their course, they make a sound deeper and heavier than thunder; the ground trembles, and stone-spray is whirled and spattered like water-spray at the foot of a fall.

The crushed and pounded soil-beds to which avalanches of this kind give rise seem excellently well adapted to the growth of forest trees, but few of them are sufficiently matured to be available, and the trees that venture upon them are in constant danger of their lives. These unplanted beds occur most commonly at the base of cliffs intersected by feldspathic veins, the decomposition of which causes the downfall of additional material from year to year. On the contrary, the rougher and far more important soil-beds resulting from earthquake avalanches are formed almost instantaneously, without being subsequently augmented in any appreciable degree for centuries. The trees, therefore, and various shrubs and flowers which find them tolerable or congenial dwelling-places soon take possession of them, and soothe their rugged features with a mantle of waving verdure.

At first thought no one would suppose that in a tumultuous pellmell down-crash of rifted rocks any specialization could be accomplished in their deposition. Both the suddenness and the violence of the action would seem to preclude the possibility of the formation of any deposit more orderly than a battered rubbish-heap. Every atom, however, whether of the slow glacier or swift avalanche, is inspired and directed by law. The larger blocks, because they are heavier in proportion to the amount of surface they present to the impeding air, bound out farther; and, because obstructions of surface irregularities have less effect upon larger blocks, they also *roll* farther on the bottom of the valley. The small granules and sand-grains slip and roll close to the cliff, and come to rest on the top of the talus, while the main mass of the talus is perfectly graduated between these extremes. Besides this graduation accomplished in a vertical and forward direction, beautiful sections are frequently made in a horizontal and lateral direction, as illustrated in Figure 4. A B is a kind of natural trough or spout near the base of the cliff, directed obliquely downward, into

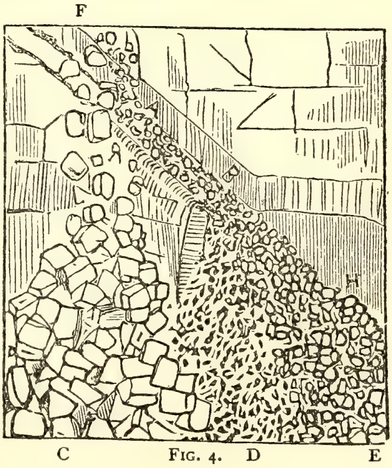

FIG. 4.

which a portion of the avalanche-stream, F, falls, and is spouted to the left of its original course. Because the larger boulders composing the spouted portion of the current move faster, their momentum carries them farther toward H, giving rise to the talus E, while the finer material is deposited at D. Again, the blocks sufficiently large to bound out beyond the deflecting spout form the rough talus C, while the smallest fragments of all—namely, the fine dust derived from chafing—float out far beyond, and settle in thin films silently as dew.

In portions of cañon walls where diagonal cleavage is developed, inclines such as A B (Fig. 5) are common. If two boulders in falling from the heights above should strike glancingly at A, the greater mass or more favorable form of boulder B might cause it to bound sufficiently far to reach the second incline, which would carry it toward D; while the smaller boulder, C, falling short, might fall under the guidance of a third incline, and be shed off toward E, the two boulders finally coming to rest a hundred yards or more apart. By these means the most delicate decompositions of stone-torrents are effected, the various resulting soils being delivered at different shoots and spouts, like the bran, shorts, and fine flour of a grist-mill. The ages of the oldest trees growing upon these soils furnish data by which some approximation to the time of their formation may be made.

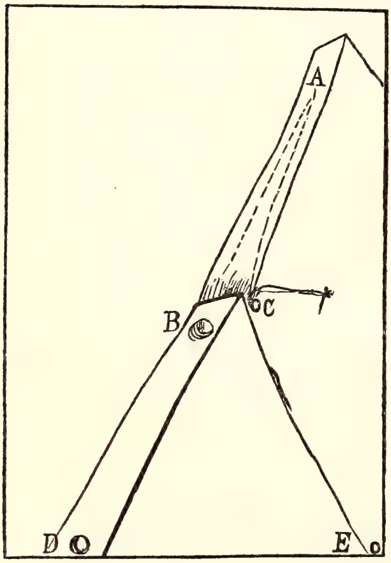

Fig. 5.

The first post-glacial earthquake sufficiently severe to produce large avalanches occurred at least three centuries ago, and no other of equal power has occurred since. By this earthquake alone, thousands of acres of noble soil-beds were suddenly and simultaneously deposited throughout all the deep cañons of the range. Though thus hurled into existence at a single effort, they are the most changeless and indestructible soil formations in the Sierra. Excepting those which were launched directly into the channels of rivers, scarcely one of their wedged and locked boulders has been moved since the day of their creation. In striking contrast with these terrible demonstrations of mechanical energy, made in the deposition of earthquake soils, is the silent and motionless transformation of solid granite into loose fine soil-beds by oozing water and the tranquil play of the atmosphere. Beds eight or ten feet deep occur on Mounts Watkins and El Capitan, on the edge of the Yosemite Valley, where the decomposition had been effected so calmly that the physical structure presents no conspicuous change; the quartz, mica, and hornblende retaining the same relative positions as when solid, yet so perfectly disintegrated that, like sand, it may be cut into with a spade. But these unmoved beds created on the spot are of relatively small extent, and as yet play an insignificant part in the support of Sierra vegetation. The main body of the smaller soil-fragments, weathered loose by the atmosphere, are transported and redeposited by winds and rains. Magnificent wind-rivers sweep the high Sierra, carrying large quantities of sand, dust, and mica flakes, besides larger fragments in the form of rough grains. These are distributed in smooth undulating fields and patches, adapted to the wants of the dwarf *Pinus albicaulis* and many of the most precious of Sierra shrubs and flowers. Many of the smaller alpine wind-beds are exceedingly beautiful, nestling in the lee of rough beaten rocks, their edges waved and embroidered, and their surfaces delicately dinted and ruffled like the garden-plats of children. During the post-glacial eruptions of the volcanoes of the Mono basin, winds distributed showers of cinders and ashes upon all the soil-beds of the adjacent Sierra. Hundreds of square miles of area are thus sprinkled on the upper basins of the San Joaquin, Merced, and Tuolumne rivers; the copiousness of the cinder-showers increasing the nearer the Mono volcanoes are approached as a center.

The numerous domes and castellated rocks distributed over the ridges and divides of the middle region abound in garnet, tourmaline, quartz, mica, and feldspar crystals, which, as the mass of the rocks decompose, are set free and fall in minute avalanches, and gradually accumulate until they come to form belts of crystalline soil. In some instances, the various crystals occur only here and there, sprinkled in the gray gravel like daisies in a sod; but in others, half or more of the encircling talus seems to be made up of crystals, tilted at all angles, and laid open to the sun. And whether in the mild flush of morning or evening, or in the dazzling white of high noon, they manifest themselves as the most exquisitely beautiful of all the soil-beds in the range.

In the hollows and levels we find soil-beds that have been compounded and laid down by streams of water. But these may be regarded as little more than reformations of glacial deposits; for the quantity of soil material eroded from solid rock by post-glacial agents is as yet hardly appreciable. Water-beds present a wide range of variability both in size and structure. Some of the smallest, each sustaining a tuft or two of grass, have scarcely a larger area than the flower-plats of gardens; while others are miles in extent, and support luxuriant groves of pine trees two hundred feet in height. Some are composed of mud and sand-grains, others of ponderous boulders, according to the power of the depositing current and the character of the material that chanced to lie in its way.

Glaciers are admirably calculated for the general distribution of soils in consequence of their rigidity and independence of minor inequalities of surface. Streams of water, on the contrary, are fitted only for special work. Glaciers give soil to high and low places almost alike; water-currents are dispensers of special blessings, constantly tending to make the ridges poorer and the valleys richer. Glaciers mingle all kinds of materials together, mud particles and rock blocks a hundred feet in diameter; water, whether in oozing currents or passionate torrents, constantly discriminates both with regard to size and shape of material, and acts as a series of sieves for its separation and transportation.

Glacial mud is the finest mountain meal ground for any purpose, and its transportation into the still water of lakes, where it is deposited in layers of clay, was the first work that the young post-glacial streams of the Sierra were called upon to do. Upon the clay-beds thus created avalanches frequently pile tangled masses of tree-trunks, mingled with burs and leaves and rocky *detritus* scraped from the mountain side. Other layers of mud are deposited in turn, together with freshet-washings of sand and gravel. This goes on for centuries from season to season, until at length the basin is filled and gradually becomes drier. At first, the soil is fit only for sedges and willows, then for grasses and pine-trees. This, with minor local modifications, is the mode of creation of the so-called flat and meadow soil so abundantly distributed over all parts of the range.

Genuine bogs in this period of Sierra history occur only in shallow alpine basins, where the climate is sufficiently cool for the growth of sphagnum, and where the surrounding topographical conditions are such that they are safe, even in the most copious rains and thaws, from the action of flood-currents capable of carrying stones and sand, but where the water supply is nevertheless sufficiently constant and abundant for the growth of sphagnum and a few other plants equally fond of cold water. These dying from year to year—ever dying beneath and living above—gradually give rise to those rich spongy peat-soils that are the grateful abodes of so many of the most delightful of alpine plants.

Beds of sloping bog-soil, that seem to hang like ribbons on cool mountain sides, are originated by the fall of trees in the paths of small creeks and rills, in the same climates with level bogs. The interlaced trunks and branches obstruct the feeble streams and dissipate them into oozing webs and stagnant pools. Sphagnum speedily discovers and takes possession of them, absorbing every pool and driblet into its spongy stems, and at length covers the muddy ground and every log and branch with its rich rounded bosses.

Here the attentive observer is sure to ask the question, Are the fallen trees more abundant in bogs than elsewhere in the surrounding forest?—and if so, then, why? We *do* find the fallen trees in far greater abundance in sloping bogs, and the cause is clearly explained by young illustrative bogs in process of formation. In the first place, a few chance trees decay and fall in such a manner as to dam the stream and flood the roots of other trees. Every tree so flooded dies, decays, and falls. Thus, the so-called chance-falling of a few causes the fall of many, which form a network, in the meshes of which the entangled moisture is distributed with a considerable degree of uniformity, causing the resulting bog to be evenly inclined, instead of being cast into a succession of irregular terraces, one for each damming log.

Black flat meadow deposits, largely composed of *humus,* are formed in lake basins that have reached the last stage of filling up. The black vegetable matter is derived from rushes and sedges decaying in shallow water for long periods. It is not essential that these beds be constantly covered with water during their deposition, but only that they be subject to frequent inundations and remain sufficiently moist through the driest seasons for the growth of sedges. They must, moreover, be exempt from the action of overflowing flood-currents strong enough to move gravel and sand. But no matter how advantageous may be the situation of these *humus* beds, their edges are incessantly encroached upon, making their final burial beneath drier mineral formations inevitable. This obliterating action is going on at an accelerated rate on account of the increasing quantity of transportable material rain-streams find in their way. For thousands of years subsequent to the close of the ice-winter, a large proportion of the Sierra presented a bare, polished surface, and the streams that flowed over it came down into the meadows about as empty-handed as if their courses had lain over clean glass. But when at length the glacial hard-finish was weathered off, disintegration went on at a greatly accelerated speed, and every stream found all the carrying work it could do.

Bogs die also, in accordance with beautiful laws. Their lower limit constantly rises as the range grows older. The snow-line is not a more trustworthy exponent of climate than the bog-line is of the age of the regions where it occurs, dating from the end of the ice epoch.

Besides bogs, meadows, and sandy flats, water constructs soil-beds with washed pebbles, cobblestones, and large boulders. The former class of beds are made deliberately by tranquil currents; the latter by freshets, caused by the melting of the winter snow, severe rain-storms, and by floods of exceptional power, produced by rare combinations of causes, which in the Sierra occur only once in hundreds of years. So vast is the difference between the transporting power of rivers in their ordinary every-day condition and the same rivers in loud-booming flood, that no definite gradation exists between their level silt-beds and rugged boulder deltas. The ordinary power of Sierra streams to transport the material of boulder soils is very much overestimated. Throughout the greater portion of their channels they can not, in ordinary stages of water, move pebbles with which a child might play; while in the sublime energy of flood they toss forward boulders tons in weight without any apparent effort. The roughly imbricated flood-beds so commonly found at the mouths of narrow gorges and valleys are the highest expressions of torrential energy with which I am acquainted. At some time before the occurrence of the grand soil-producing earthquake, thousands of magnificent boulder-beds were simultaneously hurried into existence by one noble flood. These ancient boulder and cobble beds are distributed throughout the deep valleys and basins of the range between latitude 39° and 36° 30′; how much farther I am unable to say. They are now mostly overgrown with groves of oak and pine, and have as yet suffered very little change. Their distinguishing characteristics are, therefore, easily readable, and show that the sublime outburst of mechanical energy developed in their creation was rivaled only in the instantaneous deposition of the grand earthquake beds.

Notwithstanding the many august implements employed as modifiers and reformers of soils, the glacier is the only great producer. Had the ice-sheet melted suddenly, leaving the flanks of the Sierra soilless, her far-famed forests would have had no existence. Numerous groves and thickets would undoubtedly have established themselves on lake and avalanche beds, and many a fair flower and shrub would have found food and a dwelling-place in weathered nooks and crevices. Yet the range, as a whole, would seem comparatively naked. The tattered alpine fringe of the Sierra forest, composed of *Pinus flexilis* and *P. aristate,* oftentimes ascends stormy mountain flanks above the upper limit of moraines, upon lean, crumbling rock; but when they have the opportunity, these little alpine pines show that they know well the difference between rich, mealy moraines and their ordinary meager fare. The yellow pine is also a hardy rock-climber, and can live on wind and snow, but it assembles in forests and attains noble dimensions only upon nutritious moraines; while the sugar pine and the two silver firs, which form so important a part of the grand forest belt, can scarcely maintain life upon bald rocks in any form, and reach full development only in the best moraine beds, no matter what the elevation may be. The mass of the Sierra forests indicates the extent and position of the moraine-beds far more accurately than it does lines of climate. No matter how advantageous the conditions of temperature and moisture, forests can not exist without soil, and Sierra soils have been laid down upon the solid rock. Accordingly, we find luxuriant forests two hundred feet high terminated abruptly by bald glacier-polished pavements.

Man also is dependent upon the bounty of the ice for the broad fields of fertile soil upon which his wheat and apples grow. The wide plains extending along the base of the range on both sides are mostly reformations of morainal *detritus* variously sorted and intermixed. The valleys of the Owens, Walker, and Carson rivers have younger soils than those of the Sacramento and San Joaquin—that is, those of the former valleys are of more recent origin, and are less changed by post-glacial washings and decomposition. All the soil-beds remaining upon the Sierra flanks, when comprehended in one view, appear like clouds in a sky half-clear; the main belt extending along the middle, with long branching mountains above it, a web of washed patches beneath, and with specialized meadow and garden flecks everywhere.

When, after the melting of the winter snow, we walk the dry channel of a stream that we love, its beds of pebbles, dams of boulders, its pool-basins and potholes and cascade inclines, suggest all its familiar forms and voices, as if it were present in the full gush of spring. In like manner the various Sierra soil-beds vividly bring before the mind the noble implements employed by nature in their creation. The meadow recalls the still lake, the boulder delta the gray booming torrent, the rugged talus the majestic avalanche, and the moraine reveals the mighty glaciers silently spreading soil upon a thousand mountains. Nor in all these involved operations may we detect the faintest note of disorder; every soil-atom seems to yield enthusiastic obedience to law—boulders and mud-grains moving to music as harmoniously as the far-whirling planets.

SIERRA CLUB

Founded 1892

402 Mills Building, San Francisco, California
Annual Dues: $3.00 (first year, $5.00)

THE PURPOSES OF THE CLUB ARE:

To explore, enjoy, and render accessible the mountain regions of the Pacific Coast; to publish authentic information concerning them; to enlist the support and co-operation of the people and the Government in preserving the forests and other natural features of the Sierra Nevada.

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John Muir, President 1892 to 1914

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EDITORIALS

Save the Redwoods For many years the great redwood forests of Humboldt and Mendocino counties have been steadily shrinking under the strokes of the lumberman's axe. The time has now come when the lordliest survivors of this giant race are making their last stand in northern California. When they are gone something as incomparable as the Pyramids of Egypt, or the Parthenon of Greece, or the human race itself, will have vanished from the earth forever. For even if young redwoods should be allowed to grow undisturbed for three thousand years, it is doubtful whether climatic conditions will remain such that they can ever again reach the stature and maturity of those which are now being cut down to make grape-stakes.

The Save-the-Redwoods League, an organization of national proportions, has been organized to raise the funds necessary to purchase from private owners a representative forest area of these trees and establish a redwood park. Pending the proposed purchase lumbermen have been induced to stop lumbering operations at points along the highway. But the amount of the funds needed is very large and the money is coming in slowly. The Sierra Club has voted its support to the league, and all our members are urged to join the league and assist in the good work.

The leading article in this number is a brief but moving plea for the saving of the Sequoias, written by John Muir years ago, when the Calaveras Grove was in danger. It seems to have been almost providentially preserved among his papers for the supreme occasion which has now arisen, and is herewith published for the first time. It will be noted that he long ago proposed doing the very thing which is now being attempted after the lapse of years and after thousands of acres of the finest redwood forests have become an ugly fire-bitten ruin. Although the uniqueness and grandeur of these Humboldt County redwoods make them one of the treasured wonders of the world, they are found in California, and we of this State can not escape responsibility either for their destruction or their preservation. W. F. B.

* * *

Membership Membership in the Sierra Club should not be merely a matter of paying dues and going on outings. The club still has work to do, even though the time is past when we had to fight to justify the very existence of the national parks. Public opinion is back of them now, and their growing popularity vindicates them among the doubting Thomases who ten years ago had nothing but jeers for the "mushy æsthetes" who recommended their preservation. The task of developing the parks is hardly yet begun, and there is much that we can do in supporting demands for increased appropriations. But, above all, our influence should be thrown toward keeping the parks what they were meant to be—specimens of wild nature used but not "improved" by man. Our members should consider themselves, individually, as so many guardians of the scenery of the west, collectively, as an intelligent mass of public opinion ready to voice its protest when the well-being of the parks or of areas that ought to be parks is in question. We are nearly two thousand strong now. Double our number and we can more than double our work. M. R. P.

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WILD FLOWER DESTRUCTION The President of the American Museum of Natural History asserts that nowhere in the world is Nature being destroyed so rapidly now as in the United States. California especially seems to be the victim of ignorance and selfishness—because she has more than other States to attract the destroyer. Not only are our peerless redwood forests vanishing away before the lumbermen and the grape-stake cutters, but the less spectacular, though not less beautiful, features of her flora are in imminent danger of practical extinction. No shrubs of California are more sightly than the wild currant and the toyon, or Christmas-berry. The one in the springtime, the other in the autumn have made our cañons and hillsides a paradise of color.

But now hordes of automobile vandals, penetrating all roads, are spreading devastation everywhere. They slash, break, cut, and uproot without thought of the future. Unless legal measures are taken speedily, the next generation will know only by hearsay the loveliness of California's tanglebrush roadsides in autumn. An especially preventable kind of destruction is caused by foreigners and others who go out from towns in trucks to strip the roadsides for purely commercial purposes at the holiday season. There is no more reason for allowing this class of persons to enrich itself by robbing a community of its common wealth of beautiful shrubs and plants than in allowing them to smother the songs of robins and meadow-larks by slaughtering them for the market. We punish the latter, as an act of injury to the community, and plant-robbers for the market should be treated in the same manner.

In the best parts of Europe it has long been customary to gauge the level of a country's culture by the foresight with which it has fostered and exercised the natural human instinct for landscape beauty. It was found to be a law that seekers after landscape righteousness speedily had other things added unto them. For tourists willingly brought their tributes of gold to the fortunate cultivators of a beautiful environment. True, we do not build Parthenons and preserve Yosemites and Sequoias for the lining of our purses. Yet no community should overlook the fact that the enhancement of its landscape beauty adds potentially to its material wealth, and that the diminution of its outdoor art values entails a double loss. W. F. B

"Light-Burning" Various parties interested in the pine region of the Sierra believe that more thorough forest fire protection would be possible in that region if controlled fires were allowed to run through the forest occasionally at some time other than during the dry season. It is claimed by the advocates of this so-called "light-burning" that absolute fire protection as practiced by the United States Forest Service tends to build up so large an accumulation of inflammable material as to lead to uncontrollable conflagrations.

Through years of hard work the Forest Service has built up a protective system in the Sierra for which the people of California should be deeply grateful. If, after this has been accomplished, there should now be improper publicity regarding the supposed advantages claimed for light-burning, the public might be led to the conclusion that the protective policy of the Forest Service is fundamentally wrong and not to be supported. This would be apt to lead in turn to very serious carelessness and incendiarism by irresponsible people.

The just procedure would seem to be to give the advocates of light-burning every opportunity to prove the merits of their plan; and for everyone to indorse the continuance of the present fire-protective policy on the national forests of California until proof of a better plan is definitely established. Such proof must show among other things that the destruction of young trees and the injuries to older trees caused by light fires are not such serious factors as to preclude the practice of light-burning.

A weakening of the present protective policy, until it is certain that something better can be substituted for it, would probably be a forest calamity of the first magnitude. W. M.

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Approaching a Million The actual number of visitors to all the national parks last summer considerably exceeded three-quarters of a million! Since this surpasses by nearly seventy per cent the national-park travel of the previous year, it is evident that the cessation of the war has been followed by a remarkable revival of interest in outdoor life. More than a seventh of this travel belongs to California. While this is a gratifying fact, it also creates problems. When six thousand persons were sojourning in Yosemite Valley at one time last summer, all available hotel and camping accommodations were not only overcrowded, but numerous applicants had to be turned away. The post-office and telephone facilities were unable to endure the strain, and much inconvenience resulted. But National Park Director Mather is endeavoring to make provision for enlarged camp and hotel accommodations, and to induce telephone and telegraph companies, as well as the Post Office Department, to provide better service. W. F. B.

REPORTS OF COMMITTEES

Treasurer's Report

To the Directors of the Sierra Club:

I beg to submit the following report on the finances of the Sierra Club covering the period from January 1, 1919, to January 1, 1920:

Balance cash on hand January 1, 1919		$2,414.45
Receipts during the year:		
Dues from members	$4,811.45	
M. H. McAllister, Half Dome stairway	1,000.00	
Advertising in BULLETIN	400.00	
Rent of room 403, Mills Building	120.00	
Part of interest from Permanent Fund	42.50	
Sale of club pins	31.95	
Sale of BULLETINS	20.25	
Interest on savings account	38.82	
Increased valuation War Savings Stamps	12.00	
Miscellaneous small receipts	29.05	6,506.02
Expenditures during the year:		$8,920.47
Rent of rooms 402 and 403, Mills Building	$ 740.00	
Salary of Assistant Secretary	960.00	
Printing and distribution of BULLETIN	1,666.01	
Payments on Half Dome stairway	1,000.00	
Payments to Southern California Section	411.00	
Office expenses, postage, and stationery	625.99	
Commission on advertisements	168.75	
Expenses of Le Conte Memorial Lodge	107.05	
Telephone and telegraph	101.74	
Traveling expenses	68.92	
Printing and distribution of circulars	56.00	
Taxes	54.23	
Local walks	51.10	
Dues to other clubs	43.00	
Election expenses	36.75	
Lectures and reunions	33.25	
Purchase of club pins	14.49	
Express	7.11	
Telephone at Soda Springs	4.65	
Debit and exchange	5.00	
Miscellaneous small expenses	7.64	
Total expenses	$6,162.68	
Cash on hand January 1, 1920	2,757.79	
		$8,920.47

Cash on hand distributed as follows:

In the First National Bank	$ 872.27
In Security Savings Bank	273.81
In Savings Union Bank and Trust Co	726.71
In War Savings Stamps	860.00
Cash in Secretary's drawer	25.00
	$2,757.79

Permanent Fund:

Balance in the Fund January 1, 1919	$2,059.74
Three new life memberships	150.00
Part interest on Liberty Bonds	41.45
Interest on savings account	3.93
Total in fund	$2,255.12

Distributed as follows:

Bond of the Third Liberty Loan	$1,000.00
Bond of the Fourth Liberty Loan	1,000.00
Cash in Security Savings Bank	255.12
	$2,255.12

The Robert S. Gillett Fund:

Amount of the Fund	$1,000.00

Invested in bond of the Fifth Liberty Loan.

JOSEPH N. LE CONTE, Treasurer

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SECRETARY'S REPORT

To the Members of the Sierra Club:

Two matters of vital interest are before the club at the present time —the destruction of the finest of our redwood forests, and the menace of sheep-grazing on the western slope of the Sierra Nevada. These issues are discussed elsewhere in the BULLETIN, but too great stress cannot be laid upon their urgency. Another matter of interest is the creation of the Roosevelt (or Greater Sequoia) National Park, which we hope will become an accomplished fact this year. It is to be hoped that the members will support the directors as earnestly as they have in the past whenever action is demanded on these issues.

One of the most important events of the year is the completion of the new Le Conte Memorial Lodge. The expansion of Camp Curry threatened to encroach on the old site of the lodge. The Camp Curry Company offered to rebuild the lodge in a more suitable place without expense to the Sierra Club. The building is a duplicate of the former lodge and more substantially built, and the new site is in many ways more attractive even than the old, giving a magnificent view of Yosemite Falls and Half Dome. It is near the site of the old schoolhouse on the south side of the valley.

The stairway up Half Dome, erected in the name of the club through the generosity of Mr. M. H. McAllister, was completed last summer and has proved to be a great attraction. An account of the trail will be found in "Notes and Correspondence," but we wish again to express our appreciation of this public-spirited action.

One hundred and ninety-eight members participated in the 1919 outing to Tuolumne Meadows, which was a success from every standpoint. The many side-trips, especially the one to Thousand Island Lake and Mount Ritter region, were of unusual interest, and, as the main camp was for the first time moved to the Ten Lake Basin, every member of the outing had the opportunity to visit this little-known section of the park.

Judging by the interest already displayed, the coming outing to the headwaters of the San Joaquin and the Middle Fork of the Kings will be the most popular in the history of the club. Not only are the members interested in visiting an unfamiliar section of the Sierra, but the renewed interest in mountaineering following upon three summers affected by war conditions probably accounts for this unprecedented condition.

Owing doubtless to the war, the club has fallen short of its normal growth during the last two years. The campaign for new members begun at Christmas-time has shown appreciable results, more than two hundred new members having been added within the last two months. The membership is at present 1908; 149 have resigned or been dropped for nonpayment of dues.

Respectfully submitted,

William E. Colby, Secretary

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Le Conte Memorial Lodge, Yosemite Valley

custodian's report for 1919

Upon my arrival, May 15th, I found the lodge incomplete and work on it at a standstill. As soon as the necessary materials arrived and weather permitted, the building was again under way. Through the kindness of Superintendent Lewis and his men, I was able to open the lodge June 5th mid the noise of nail-driving and array of carpenter's tools. The season was shorter than that of former years, but more popular. At all times Le Conte Lodge was crowded with visitors, manifesting considerable interest in "the beautiful stone building" and the man to whom it was dedicated. Twenty-eight hundred names appeared on the register at the time of closing, but fully one-third of the visitors failed to register.

There was constant demand for more books and specimens. The complete works of Joseph Le Conte and John Muir, Indian lore, and studies in flower and bird life, containing colored plates, were the books most frequently called for. A fine innovation was the series of lectures on subjects pertaining to Yosemite Valley, given by the University of California Extension. The lectures were largely attended and a marked success, and nearly all were held in front of the lodge.

The Sierra Club may well be proud of the new Le Conte Memorial Lodge. It is a beautiful building, in a more beautiful, natural setting. With the ultimate growth of Yosemite Valley will come an increasing need for a library and educational center. It is my idea, born of intimate association with travelers who came to the lodge and with the aims of the Sierra Club, that the latter will see fit to meet this need. It is also my sincere hope that the future will witness a renewed and more unified interest, that Le Conte Lodge may become a living memorial to the man who would have it so.

KATHARINE STOUT,
Pasadena, Cal.

⁂ *As this number of the Bulletin goes to press, an announcement is received of the resignation of Mr. Henry S. Graves, Forester, U. S. Department of Agriculture. The Sierra Club desires to express its appreciation of the exceptional service which Mr. Graves, one of the Club's Honorary Vice-Presidents, has rendered to the Nation during the past ten years while he has been in charge of all National Forests throughout the United States.*

NOTES AND CORRESPONDENCE

MOUNT RAINIER IN WINTER

In July the flanks of Mount Rainier are a fairyland of wild flowers. Everywhere the pale stars of the erythroniums, the white cassiopebells, the lavender rays of asters jostle heads so closely that the little folk themselves could not pass without rubbing shoulders with them. In January Rainier is another fairyland—a white silence of snows sweeping from the lower forests up to the glaciers. The smooth slopes are broken only by dark-green shadings in the frondlike, sculptured masses of the snow-encrusted firs and hemlocks; by icicle-hung streams, or the bare branches of willows showing red and yellow against the white.

The midwinter five-day outing of the Seattle Mountaineers to Paradise Park is as important an event in their year as the summer outing itself. In spite of rain or snow, of flood or blizzard, the new year is always begun as all new years should begin, up as near heaven as the limitations of men and mountains will allow.

We were a hundred and twenty-five this year, Mountaineers for the most part, of course, but with a sprinkling of Mazamas and Sierra Club as well. In spite of the severe cold of the preceding weeks, we encountered no snow at all on the first afternoon's walk from Ashford to Longmire's Springs. The weather was clear and not cold. Mists closed in next morning, but little rain fell. The trail was practically free from snow until we were past Narada Falls. Even then it was so well crusted that we did not have to put on snowshoes.

The inn at Paradise, which was turned over to us to run for ourselves, was stocked with provisions sent in before the snow. We had our own cooks and were our own waiters—took care of the rooms and kept up the fires ourselves. The great living-room, buttressed with silvery logs cut from the old Ghost Forest near the Mazama camp of 1905, has a huge fireplace at either end. With a piano and a phonograph for dance music, with stunts staged by our talent and a daily "newspaper" to read aloud, the long evenings sped away like magic.

Snowshoeing began in a snowstorm. White slopes rounded away into the clouds till one could not say where earth ended and sky began. All morning on our sky-line trail up to the head of Sluiskin Fall the snow sifted us with white, making us look like cohorts of Santa Claus. Coasting, tobogganing, or ski-running that day was like parachuting down into the bottomless pit, for the final destination was hidden in fog. The ski-runners had rather the best of it, for they were not further blinded by the clouds of powdered snow that the toboggans raised. Over crests and into holes, through woods or into woodpiles, the tobogganers took their headlong course, undismayed, even though spilled, until night called a halt.

The fog lifted that evening and for the rest of our trip the weather was perfect. From dawn on December 31, we were out of doors. Both Rainier and the Tatoosh Range shone dazzlingly clear. The tops of the dead trees glittered with ice. The snow was dry and sparkling, flying out from the higher crests of the mountain in shining banners. Thin wisps of ice-cloud were forming constantly in the sky. For a minute only they would float high above us, then, like a puff of smoke, they were gone.

Many parties started out—to climb to the saddle of Pinnacle Peak, to ramble toward the Cowlitz Glacier, to climb to McClure Rock, or even as far as Camp Muir. Up near timber-line was a still more exquisite world. St. Helens, Adams, and Hood shone high on the southern horizon. Puget Sound was a sea of fog, with promontories of forested hills charting a new shore-line. Cornices of snow cut the sky. Struggling timber-line trees, wholly encased in ice, stood stiffly upright, like branches of coral. White-capped rocks suggested half-revealed sculptured forms, as if a Rodin of the frost country had been busy there.

Ski-runners were in their element. The snow was in perfect condition, and the long runs down through that glorious sunshine must have been entrancing. Three young girls climbed with us almost to timber-line and shot down abreast, seeming to skim the surface of the snow without touching it, as a gull skims the crests and hollows of the sea. At sunset Rainier wore a crown of rainbow color. All the near-by slopes were pale green, banded with violet shadows. Western skies glowed with orange and yellow, eastern showed dull rose and pearly gray. Then came bright moonlight.

The annual vaudeville kept actors and audience both occupied until midnight. We filed out into the moonlight then, and, facing the mountain, sang the good-night song of the Mountaineers. The notes of "Taps" ringing out over that great white amphitheater made a rarely beautiful ceremony of the passing of the old year.

MARION RANDALL PARSONS

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BIRD SANCTUARIES ENDANGERED

Berkeley, November 3, 1919

HON. FRANKLIN K. LANE, Secretary of the Interior,
Washington, D. C.

My dear Secretary Lane: You will recall that in August, 1908, the late Theodore Roosevelt created by presidential proclamation the Klamath and Malheur lakes reservations for the protection of wild birds. It has come to our notice that, through ill-advised plans of reclamation, the water supply from the Klamath River has been cut off from the Lower Klamath Lake by means of a dike. In consequence, the lake has become an ugly alkaline waste, without any corresponding benefit to anyone. Mr. A. P. Lewis, Director of the Reclamation Service, has written Senator Chamberlain that a recent investigation of the marshlands around Lower Klamath Lake has failed to disclose positive evidence of their value for agricultural purposes. He writes that "very little conclusive evidence can be found as to the agricultural values of the lands around Lower Klamath Lake."

May I inquire, for the information of our membership, why the Reclamation Service should not be directed to open the dikes and let the water back into Lower Klamath Lake? According to our present information, this act of cutting off the water looks like a very useless piece of destruction, and countless birds that had their nesting-sites here are deprived of their breeding-grounds. The purpose for which Theodore Roosevelt established these breeding-grounds is thus annulled. We are further informed that unless speedy relief is found the Malheur Lake Reservation will also become a barren waste.

Regretting the necessity of claiming your attention with this matter,
I am, Sincerely yours,
William Frederic Badè, President

DEPARTMENT OF THE INTERIOR, WASHINGTON

Nov. 15, 1919

Mr. William Frederic Badè, President Sierra Club.
402 Mills Building, San Francisco, California.

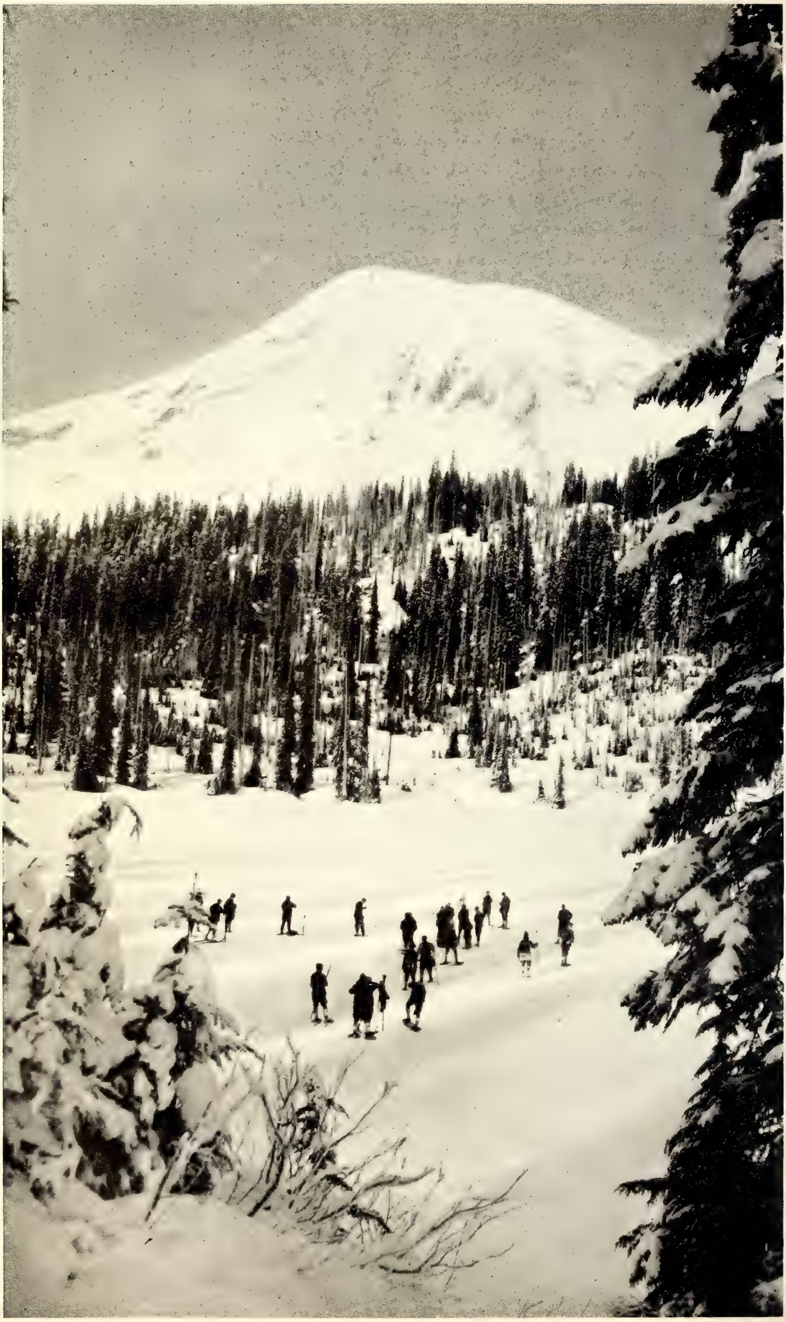
Dear Mr. Badè: I have your letter of November 3 regarding the Oregon bird reserves.

We are greatly interested in these, particularly that at Lower Klamath Lake, which is intimately related to our reclamation work in that vicinity. We are not conducting any operations at Malheur Lake.

At Lower Klamath Lake there is a large bordering area of lands that have been swampy, and there is a considerable sentiment in favor of making these lands available for agricultural operations. This was a part of the plan for the Government reclamation project from the start, and the States of California and Oregon passed special acts to encourage the development, ceding their rights to the United States. Upward of 20,000 acres of such lands in Oregon have been organized as the Klamath Drainage District, and our present arrangements at the lake are the subject of a contract with this district. Under this agreement the United States is secured for the considerable expenditure it has made in the past in the interest of the development of these marsh lands for agriculture. In return, the United States agreed to close the gates, shutting out Klamath River, and to keep them closed. In making the agreement, however, we foresaw that the resulting conditions might make it the wise thing to do to some time reopen the gates, and at our suggestion the district accepted a provision in the agreement under which this may be done.

The district has promptly met its obligations under this contract and

PARADISE PARK, MOUNT RAINIER
Midwinter Outing of the Seattle Mountaineers
Photo by Rodney L. Glisan



MIDWINTER OUTING OF THE SEATTLE MOUNTAINEERS, MOUNT RAINIER
Photo by Rodney L. Glisan

has made two of the payments called for as they fell due. Obviously, the district is entitled to consideration in connection with the suggestion that the gates be reopened, and we have therefore suggested to the State Biologist of Oregon and others interested that they get in touch with the district in order that all concerned may agree as to the best thing to be done. Cordially yours,

FRANKLIN K. LANE

DEPARTMENT OF AGRICULTURE, WASHINGTON

Nov. 19, 1919

DR. WILLIAM FREDERIC BADÈ, President Sierra Club,
Berkeley, California.

Dear Doctor Badè: Receipt is acknowledged of your letter of November 3 in regard to conditions at Klamath and Malheur lakes reservations in Oregon.

The reservation on Klamath Lake was created in 1908, subject to the use of the area by the Reclamation Service. Whatever reservation we have at this point is necessarily dependent on the reclamation project. The question of opening the dikes and flooding the marshland is solely in charge of the Reclamation Service in the Department of the Interior, and not one directly under the jurisdiction of this department.

Conditions at Malheur Lake are entirely different, but complicated by the fact that much of the land within the reservation boundaries has been alienated. The whole question is receiving careful consideration by the department, and we hope that a solution may be found in a way to safeguard the welfare of the birds and insure the permanence of the reservations. Very truly yours,

J. R. RIGGS, Acting Secretary

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URGENT NEED OF PROTECTION FOR THE TOYON

We are glad to publish this appeal to our membership from Mrs. Bertha M. Rice, the efficient and active secretary of the California Wild Flower Conservation League. The situation has been by no means overdrawn, and we comment upon it editorially:

"California has her game preserves, her State and national parks and forests, and other valuable safeguards of the wild. But there are no laws to protect our beautiful wild flowering shrubs and interesting native plants, many of which have become candidates for extermination. The population of California is increasing with such rapidity and the cultivation of the land in vast areas is so extensive, that, together with the cutting down of forests and forest fires, the irrigation of deserts and drainage of marshes, and the numerous grazing herds, they have all but erased our once bewilderingly beautiful gardens of wild blooms.

"The balance of nature has been sadly disturbed by the rapidity with which the progress of agriculture has changed the fair landscapes of the

Golden State; and the birds and the bees, as well as the flowers, have been having rather a hard time of it. However, it is not so much the inevitable for which we grieve as it is for the thoughtless and unnecessary destruction which now threatens practical extermination of some of the more cherished species of our native flowers.

"You who know the freedom of the high Sierra and the long, winding trails and unfrequented by-paths of the more inaccessible mountains and valleys of California do not realize this so keenly as do they whose lives are more strictly confined to the populous centers of the State.

"The highways and byways of California, which once were adorned with multitudinously tinted and fragrant wild blooming things, are being desolated and marred by the throngs of automobilists and outdoor enthusiasts whose appreciation of beauty is somewhat misdirected, to say the least.

"The toyon, or red-berry, sometimes called wild holly, comes in for more than its share of this sort of vandalism. It is no infrequent sight on Sundays and holidays to see hundreds of automobiles and hikers literally loaded down with branches from these beautiful trees. In their haste to gather and be gone, people frequently cut down the trees, or twist and hack huge branches from their delicate trunks, thus sadly marring their beauty, if not permanently injuring the growth. The beautiful toyon is one of the most attractive and characteristic features of this State, giving a flame of color to our otherwise flowerless roadsides at this season of the year, and aside from sentimental and æsthetic reasons, it should merit protection as a valuable asset to the State's charm and beauty. Tourists never cease to exclaim over and admire its rich and cheerful coloring, which furnishes such a marked contrast to the wintry east. From reports gathered in various localities, we learn that the toyon trees have been almost obliterated in places, and while there seems to be at present an unlimited supply of red berries in the more remote districts, the increased demand for them, and for other wild shrubs, for holiday decorations, threatens in time even these vast reserves. Venders of wild holly and greenery are having shipped to them daily, and in immense quantities, such material from various parts of the State. If this demand increases, and is not regulated, it will, added to the thoughtless extermination carried on by motorists and other unthinking people, practically exterminate some of California's most attractive features.

"We feel that much may be accomplished through a campaign of education and publicity, but enforced measures of regulation have already become necessary in some localities, and wherever necessary the matter should be brought to the attention of supervisors or local magistrates.

"The birds will miss the berries, and the bees will miss the flowers, and the landscape will lack its flame of color to cheer us, and something beautiful will have gone out of our lives—something we cannot regain unless we cherish and protect before too late these fairest and rarest of Nature's offerings."

ASSOCIATED MOUNTAINEERING CLUBS OF NORTH AMERICA

The membership in the Bureau has shown steady increase, and now numbers thirty-three clubs and societies with over 65,000 individual members, as follows:

American Alpine Club, Philadelphia and New York.
American Forestry Association, Washington.
American Game Protective Association, New York.
America Museum of Natural History, New York.
Adirondack Camp & Trail Club, Lake Placid Club, N. Y.
Appalachian Mountain Club, Boston and New York.
Boone and Crockett Club, New York.
British Columbia Mountaineering Club, Vancouver.
Colorado Mountain Club, Denver.
Dominion Parks Branch, Dept. of the Interior, Ottawa.
Field and Forest Club, Boston.
Forest Service, U. S. Dept. of Agriculture, Washington.
Fresh Air Club, New York.
Geographic Society of Chicago.
Geographical Society of Philadelphia.
Green Mountain Club, Rutland, Vermont.
Hawaiian Trail and Mountain Club, Honolulu.
Klahhane Club, Port Angeles, Wash.
Mazamas, Portland, Oregon.
Mountaineers, Seattle and Tacoma.
National Association of Audubon Societies, New York.
National Parks Association, Washington.
National Park Service, U. S. Dept. of the Interior, Washington.
New York Zoological Society, New York.
Palisade Interstate Park Commission, New York.
Prairie Club, Chicago.
Rocky Mountain Climbers Club, Boulder, Colorado.
Sagebrush and Pine Club, Yakima, Wash.
Save-the-Redwoods League, Berkeley, California.
Sierra Club, San Francisco and Los Angeles.
Tramp and Trail Club, New York.
Travel Club of America, New York.
Wild Flower Preservation Society of America, New York.

The common bond uniting all is the desire for the preservation of our finest scenery from commercial ruination. We are working in co-operation with the National Park Service for the creation, development, and protection of our national parks and monuments. In our annual BULLETIN attention is called to what various departments of the Government are doing for the mountaineer and traveler, and mention is made of the claims of scenic regions to become national parks or monuments. When these projects are considered by the Government we present the views of our members, and give publicity to the plans of the Government.

We have encouraged and assisted our clubs in forming and increasing reference and circulating collections of books for the use of their members. We are calling public attention to many important but little-known scenic regions by illustrated magazine articles, and by illustrated lectures before leading clubs and societies.

LeRoy Jeffers, Secretary,
Librarian American Alpine Club,
476 Fifth Ave., New York

. . .

The Forest Service on Sheep-Grazing in the High Sierra

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE, WASHINGTON

Mr. Wm. F. Badè, November 26, 1919
Sierra Club, San Francisco.

Dear Mr. Badè: I have received your letter of November 10th in which you transmit a resolution of the directors of the Sierra Club requesting that sheep be excluded from the west slopes of the Sierra Nevada, thereby restoring the policy in force before the war.

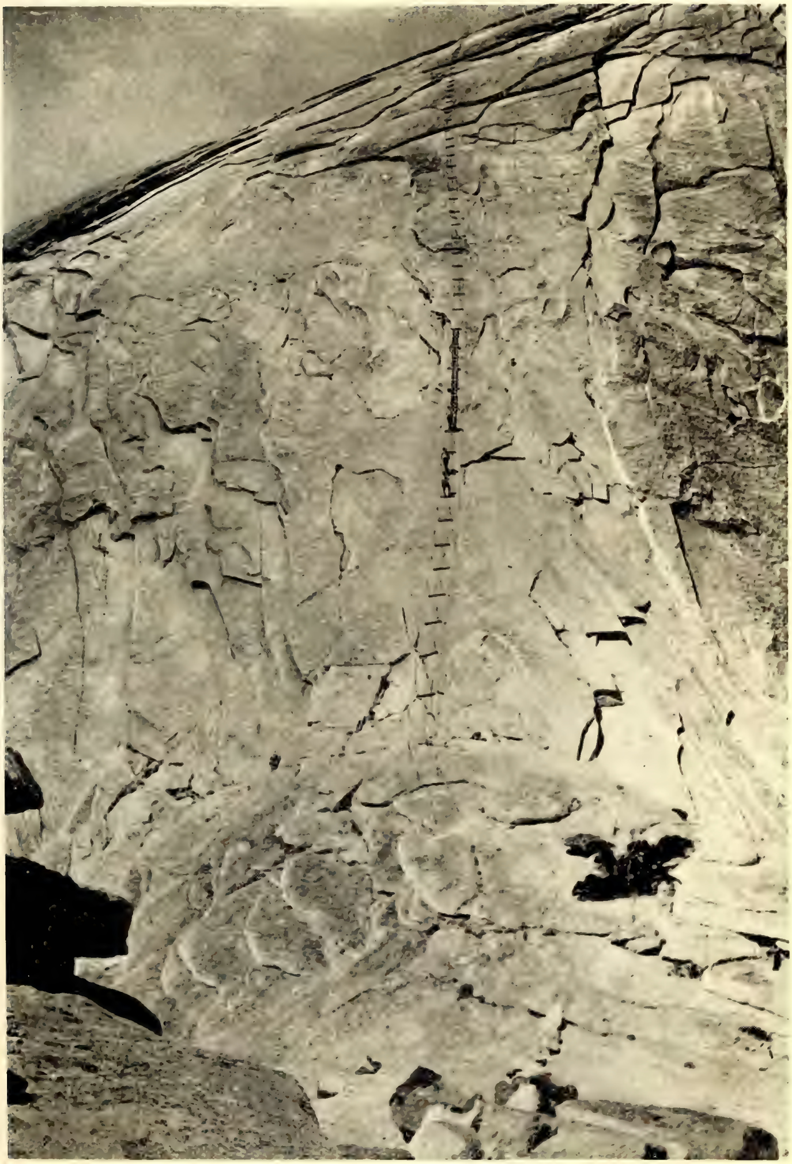
Before receiving your letter a policy had already been decided upon along these very lines. During the past summer I myself went into the question of grazing sheep in the high Sierras, and had examinations made by one of my associates from the Washington office in company with representatives of our district office. As a result of this investigation, it is perfectly clear that the exclusion of sheep upon those portions of the forests having high recreation value and used by campers and tourists is desirable.

Instructions have already been issued regarding the discontinuance of issuing permits for sheep-grazing on extensive areas within the Sequoia and Sierra national forests. There are certain other points about which I have not yet issued definite instructions until I secure certain further information. This has to deal not with the ultimate policy, but rather with what steps should be taken during the coming year.

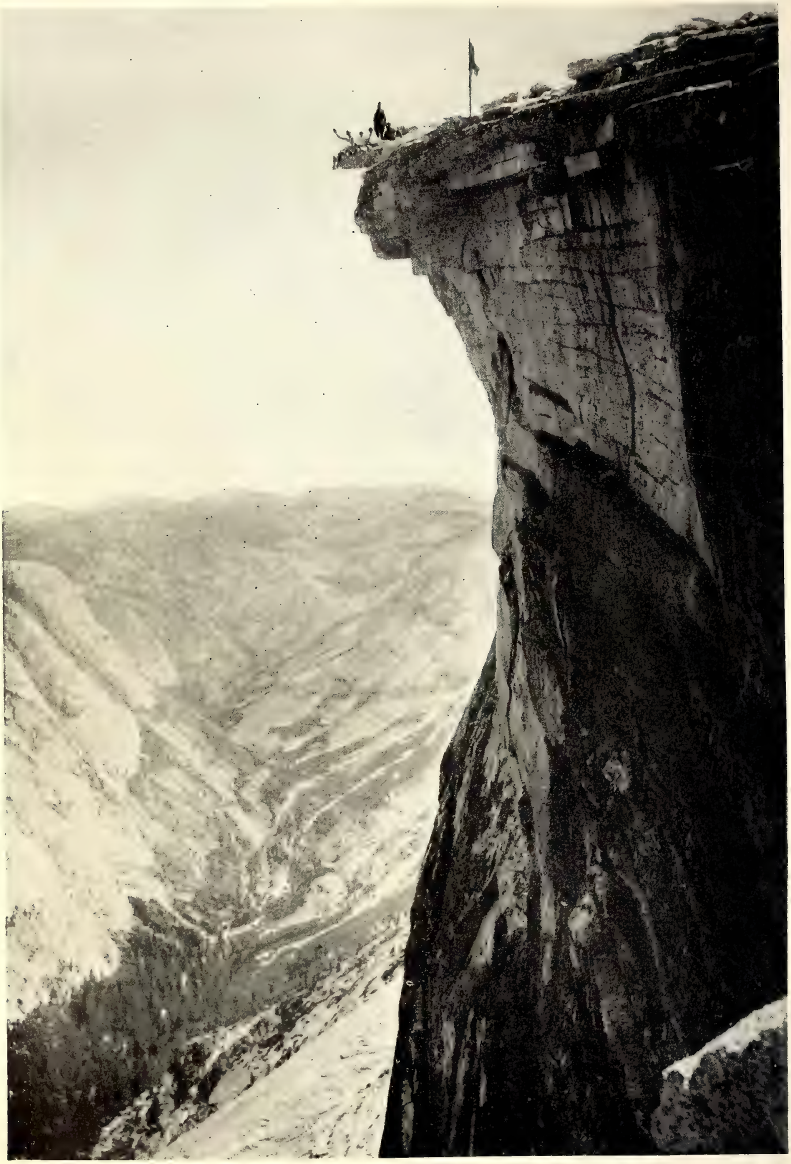
It was my intention to inform the Sierra Club regarding our policy in reference to grazing just as soon as I had reached the point where I could make announcement as to action for the coming year on specific areas. Naturally the first step is in connection with the headwaters of the Kings and Kern rivers and in the basin of Evolution Creek, which is a tributary of the San Joaquin River.

We are also working out plans for setting aside additional areas for camp-grounds and pasture purposes and for such further restrictions of cattle-grazing upon important recreation areas as may be necessary.

We have been handicapped in this work during the past few years on account of conditions arising out of the war. We should now be able



THE NEW CABLE STAIRWAY UP HALF DOME



THE OVERHANG AT THE SUMMIT OF HALF DOME
Looking east up Tenaya Cañon

to work out a co-ordination of cattle-grazing with the recreation features of the forests in a way to really meet the situation.

It is my desire to co-operate in every way possible with the Sierra Club, and we shall undoubtedly have occasion to seek your co-operation, not only in the matter of recreation in the California forests, but also in questions pertaining to the bringing about of better protection and handling of private forests in the State.

Very sincerely yours, H. S. GRAVES, Forester

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THE HALF DOME TRAIL AND STAIRWAY

Some time ago Mr. M. Hall McAllister, of San Francisco, a member and good friend of the Sierra Club, offered to erect under the Club's auspices a stairway to the summit of Half Dome. This generous offer was accepted by the directors of the club. Permission was granted by the National Park Service and the work was completed last spring. Many visitors to the valley last summer keenly appreciated the opportunity to scale Half Dome in safety, and to see the wonderful views which the summit affords. We are glad to publish the following description of this cable stairway:

"It consists of two sections. The first is on the small dome, or saddle, and consists of a zigzag trail and stone steps covering about six hundred feet. The second section leads up the big incline on the large dome. This slope is of polished granite, about eight hundred feet in length. On this incline, which varies from forty-five to sixty degrees, is placed a double hand-rail of steel cables set into a double line of steel posts thirty inches apart, like those of a steamer's gangplank. These steel posts are set into sockets drilled in the granite every ten feet and at intervals of one hundred feet heavy chains bolted in the rock will help to strengthen the cables or take up any strain on them. When the season is over the caps on the top of each post will be unscrewed, the cables, which are anchored permanently at the top and bottom of the rock, will be lifted out of the posts, and the posts taken from their sockets and stowed away off the rock until spring. It is not thought that the cables lying flat on the rock, and being also held by the safety chains, will be at all disturbed by the spring ice-avalanches.

"The trip can be made as follows: About three hours from the foot of the Vernal Falls Trail on mule-back to the foot of the zigzag trail or 'Rock Stairway'; this ride is up the regular Yosemite Trail to Cloud's Rest, and you rise about thirty-four hundred feet above the valley. Leaving the mules at this point, a walk of about three hundred yards and a rise of six hundred or seven hundred feet take you to the foot of the cable stairway, where a climb of another eight hundred feet, holding to the wire cables, will land you on the summit of Half Dome.

"It is best to wear rubber-soled tennis shoes, as the granite is so smooth and slippery that spiked soles are dangerous. For those who feel at all timid safety belts are provided, which fasten you to the cables so that it will be impossible to slip and meet with an accident.

"The work was done under the direction of experts from the Sierra Club, and part of the expense shared by the park authorities. The stairway has now been completed and turned over to the Yosemite National Park for the use of the public. The memorial plaque at the foot of the stairway reads:

ERECTED
1919
UNDER THE AUSPICES OF THE
SIERRA CLUB
TO REMEMBER
CAPTAIN GEORGE ANDERSON
WHO FIRST ASCENDED THIS DOME IN
1875

San Francisco, 5 September, 1919

Prof. J. N. Le Conte, Treasurer Sierra Club,
Berkeley, California.

Dear Sir: In re Half Dome trail and stairway: Much obliged for the check ($129.52), which balances this account; a receipt for same I have mailed to the Mills Building office.

I find that the whole work has amounted to a value of approximately $5000, the exact payments being as follows:

Paid by M. Hall McAllister:		
Labor, steps and trail on saddle and cable stairway on big incline	$2,903.09	
Material for above	833.48	$3,736.57
Furnished by Yosemite National Park:		
(Mr. W. B. Lewis, Superintendent, estimated amounts, including cost of connecting trail from Cloud's Rest Trail to Gateway.)		
Transportation for entire work	$ 271.00	
Tools and equipment for entire work	350.00	621.00
Total		$4,357.57

Hoping it will prove a popular and lasting attraction to the Yosemite and redound to the credit of the Sierra Club, I remain

Yours very truly,
M. Hall McAllister,
485 California Street

Berkeley, October 18, 1919

My dear Mr. McAllister:

As president of the Sierra Club, it becomes my pleasant duty to convey to you the unanimous and cordial vote of thanks, passed at the meeting last Saturday, for the Half Dome trail and stairway which you generously caused to be built under the auspices of the club. It is, in the opinion of all, a superb addition to the attractions of the valley for visitors. Personally I hope we may soon have in the BULLETIN a series of views taken from Tissiack at different times of the day, season, and atmospheric conditions by first-rate camera artists. I anticipate, too, that soon the ease of access now afforded to that superb outlook will invite meteorological observations in air-currents and electrical phenomena.

Again assuring you of the deep gratitude of the directors of the Sierra Club for your generous gift, I am,

Cordially yours,
WILLIAM FREDERIC BADÈ

Mr. M. Hall McAllister,
485 California Street,
San Francisco, California.

San Francisco, 23 October, 1919

PROF. WILLIAM F. BADÈ,
President Sierra Club.

Dear Professor: Your letter of the 18 October has my attention, and I beg to thank you and the directors of the Sierra Club for your cordial vote of appreciation of the above work.

I can assure you it was a great pleasure to plan and carry out this scheme, of which I had thought for some years, but naturally felt timidity in attempting to undertake a task which might result in failure from financial or physical reasons.

The trail and stairway are, I understand, considered a success by the valley people and have already been enjoyed by a large number of mountain-lovers.

A complete album of photographs is now under way, and as soon as it is finished I hope to send the club several copies for their clubrooms and lodges.

Wishing long life and prosperity to the Sierra Club, and congratulating them on their new president, I remain

Yours very truly,
M. HALL MCALLISTER,
485 California Street

. . .

THE NATIONAL PARKS ASSOCIATION, 1512 H STREET NORTHWEST
WASHINGTON, D. C.

December 18, 1919

Dear Mr. Badè:

I accept with pleasure your invitation to tell the members of the Sierra Club what the National Parks Association is, and why it should be supported by the membership of Californians who love the parks and the mountains.

It was organized on May 29, 1919, by a committee of which Dr.

Charles D. Walcott, secretary of the Smithsonian Institution, was chairman, to perform necessary work in connection with the national parks which lies outside the province and the function of the National Park Service of the Department of the Interior. It was proposed by the present executive secretary, and its organization was encouraged by Mr. Mather, then assistant to the Secretary of the Interior, as long ago as the autumn of 1916, but war prevented its inception. To-day it is working in hearty partnership with the National Park Service; nevertheless, it is wholly outside of Government control, and is so organized that it can never fall under political influence.

In brief, its purposes are to organize and develop the fullest uses of the national parks for all the people, to take advantage of their opportunities for popular education, to study them and interpret their scenery, to place special emphasis on the conservation of wild life, to make the name National Park a trademark in the competition for the world's travel, and to maintain the ideals of the present enlightened administration of the parks during periods of stress and change which future years may bring about.

The distinction between the functions of the National Park Service and the National Parks Association is clear and definite. The Government promotes access to and between the parks, builds roads and trails within them, protects their wild life, polices them, and, through concessions, provides transportation and hotel accommodations at reasonable prices. In effect, it says to the people: Here are your national parks; now enjoy them. There its functions and appropriations end, and there the National Parks Association begins its function of organizing their popular uses and enjoyment and turning them to the best account of the people and the nation.

In practice the association is already producing incisive results. It has a powerful publicity machine, and is using it. It is leading several strong eastern associations to the rescue of the endangered Yellowstone elk herd. It is assisting the American Bison Society in its movement for the saving of the antelope, now almost extinct. It has promoted the establishment of the first regular course on the meaning of scenery in Columbia University. It has established a strong committee to develop a system of national monuments which shall commemorate the early exploration and history of the nation. It has begun work on sets of national-park lantern-slides for university extension which shall popularize the geology of these regions. It has begun a traveling exhibition of national-park photographic enlargements which shall make plain the creative processes of nature—these to pass from library to library. It has begun to issue popular publications, the very first number of which has attracted the attention of a national scientific society.

The practical reactions of its work upon increasing travel are already so evident that the Denver Chamber of Commerce is carrying out at its own expense a lively campaign throughout Colorado for association membership, and one of our greatest national railroad systems has volunteered its financial support as soon as railroads become able again to support anything. But the National Parks Association must owe its support, not to business interests, but to a strong membership which is representative of the whole country; for then, and not till then, will it exercise an influence proportionate to its leadership and activity.

Membership is coming fast, but so far not from California. Besides several university professors, the association has not a dozen members from California, the State of four national parks. It ought to have three hundred now and a thousand a year from now.

The impulse which will put California behind this vigorous, virile movement must originate in California. It would seem extremely appropriate for the Sierra Club to become the organizer of that impulse.

I may add that the membership is three dollars a year, the tangible value of which the association hopes to return in its publications of new studies in scenery and wild life, its national-park news bulletins, and its other stated forms of service. The first of the publications, on the new Grand Cañon National Park, contains so many facts new to the public that an effort is being made by educators outside of this association to get it in the hands of geography teachers generally. The publication on Zion Cañon, which was made a national park November 19th last, is still more striking in its assemblage of important facts and relationship hitherto not known to the public. Others planned will carry out the promise of this beginning.

I hope and expect to have California's co-operation in advancing the important work of the National Parks Association. I want it in the form of memberships.

Sincerely,

Robert Sterling Yard, Executive Secretary

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THE NATURAL HISTORY OF THE SIERRA NEVADA

A COURSE OF INSTRUCTION FOR THE PROSPECTIVE SUMMER VACATIONIST

"Can you read a roadside or a trailside as understandingly and as pleasurably as you read a book?" Believing that our members will wish to enlarge their outdoor interests in the direction of this very pertinent question, we gladly co-operate with the Extension Division of the University of California in announcing the following course of lectures by Dr. Harold C. Bryant, economic ornithologist of the university, beginning March 22 in San Francisco.

Fee for ten lectures, $5.00. Register for this course at 301 California Hall, Berkeley, or at 140 Kearny Street, San Francisco.

1. The summer vacation: where, when and how to go.
2. Transportation and equipment. Camp equipment (Ellery Arms Co.).
3. Structure and history of the Sierra.

4. Distribution of plant and animal life in California.
5. California trees. Marks for field identification.
6. California wild flowers. Distinctive Sierran wild flowers. Exhibit: Herbarium specimens.
7. Fish and fishing in California.
8. Sierran birds. Marks for field identification. Exhibit: Common Sierran birds.
9. Common mammals of California. Tracks and tracking.
10. Preservation of trophies. Taxidermy; photography.

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The following names were omitted from our Service Record last year:

Col. H. C. Benson, San Francisco.
Lieut. Geo. H. Bardsley (teacher of electricity), Ft. Monroe, Va. (Artillery).
Mrs. Edna Adams Bardsley, Red Cross, Fort Monroe, Va.
Ernest Meiere, Sgt. Q. M. C., U. S. A., France.
Neill C. Wilson.
Ernest Meiere, Sgt. Q. M. C., U. S. A., France.
Elizabeth S. Hammond, interpreter for Base Hospital 36, U. S. A.
Lloyd H. Berendsen, 2d.Lieut. Infantry, U. S. A., Machine Gun Firing Center, Camp Hancock, Ga.
John Bakewell, Jr., Red Cross, France.
E. Dorothy Valantine, Army Nurse Corps, Base Hospital 120, France.
Fred Monhof, Eng. Corps, Naval Reserve, San Pedro.

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"LIGHT-BURNING"

An exhaustive paper, entitled "Forest Fire Protection in California," by S. B. Show, contains the following conclusions with respect to "light-burning," or "Piute forestry." We are glad to publish these conclusions because they represent the carefully considered attitude of the Forest Service toward a prevention theory that in practice has proved very destructive to forest reproduction. Mr. Show thus summarizes his conclusions:

1. The methods used by the Forest Service are proved by ten years of actual practice, while those of the controlled burning are, it must be said, largely theory, rather than practice.

2. That in a comprehensive plan for the perpetuation of forests we absolutely cannot disregard the value of reproduction.

3. That the damage which is caused by the practice of light-burning, or controlled burning, to merchantable timber is much greater than the cost of preventing it.

4. That light-burning, an ideal protective measure in theory, in actual practice does not protect.

5. That in the use of fire there are such dangers that the use of the method is open to serious question.

6. That light-burning is admittedly the lesser of two evils, and is based on the fundamental assumption that fire prevention cannot protect the forests. On this assumption the light-burner says: "We will accept the losses due to the method in preference to the larger losses which we believe will occur under the other system." There is nothing to show that this fundamental assumption is the correct one, and there is much to show that forest-fire protection as practiced by the Forest Service in California does in the main deliver consistent and effective protection for the timberlands.

· IN · MEMORIAM ·

· ROBERT · HOLLISTER · CHAPMAN ·

As we were about to go to press came the sad news that a distinguished member of the Sierra Club, Major Robert Hollister Chapman, died on Sunday evening, January 11, 1920. Born at New Haven, Connecticut, July 29, 1868, he was only in his fifty-second year and at the summit of his professional career as a topographic engineer. As a member of the United States Geological Survey he explored and mapped some of the wildest portions of the Southern and Western States, including a portion of Death Valley and adjacent deserts, and parts of the high Sierra. At the request of the Canadian Government, he joined the Geological Survey of Canada in 1909, introducing American methods into its work. During the war he was assistant to Brigadier-General Bingham in organizing and perfecting the defenses of New York City. He was an enthusiastic mountaineer, holding a long record of ascents, many of them made in the remote, rugged wilderness of British Columbia and Alberta. For a number of years past he has been the secretary of the American Alpine Club, an organization in which his knowledge, experience, and enthusiasm will be sadly missed. He was a fellow of the Royal Geographical Society of England and of the American Geographical Society. Among his writings are many bulletins published by the governments of the United States and Canada, as well as scientific and descriptive articles. The loss of a man like Major Chapman, a productive scientist of distinguished ability, a comrade and fellow mountaineer of noble character and high purpose, will be sorely felt in many circles. The editorial staff extends to his widow, Frances Andrews Chapman, heartfelt sympathy.

BOOK REVIEWS

Edited by Marion Randall Parsons

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THE GAME BIRDS OF CALIFORNIA* As a university publication, this is a contribution from the California Museum of Vertebrate Zoology, and the authors are Joseph Grinnell, Harold Child Bryant, and Tracy Irwin Storer. Even the most self-possessed reviewer, if he cares at all for bird-life and the outdoors, must grow enthusiastic over such a book. Not only in the matter of contents, but also in its mechanical excellences of binding, printing and illustrations, this is one of the best pieces of work that has ever come from the University of California Press. The latter deserves to be especially congratulated on the printing of the colored plates. There are sixteen of them—twelve by Louis Agassiz Fuertes and four by Allan Brooks—and they are so beautiful that one is tempted to take them out of the volume and frame them. An equipment of ninety-four text illustrations lends additional aid to the student who desires to identify the different species.

Lest readers of this notice infer from the title that the book is intended solely for sportsmen, let me hasten to state that it "aims to supply the naturalist with complete information to date regarding the life histories of California birds, to give the hunter useful facts concerning the birds he wishes to shoot, to furnish the legislator with helpful suggestions relevant to the preparation of game laws, and to give the conservationist information which will aid him in his efforts to perpetuate bird life." The book fulfills this manifold purpose admirably, and by exhibiting the gaps in our knowledge of many of the species supplies valuable hints to future observers.

The reader will find here a practically complete summary of our knowledge of the one hundred and eight game birds of the State. The extensive collections and field-notes of the Museum of Vertebrate Zoology are a guarantee for the scientific accuracy of the information offered. Besides, Director Joseph Grinnell is undoubtedly right when he declares in the preface his conviction that "the highest plane of scientific output can be accomplished only through co-operative effort. . . . . Where one author working alone would make mistakes unawares, two, or better, three, are able to check one another's output to advantage." In the opinion of the reviewer the book supersedes, in attractiveness, accuracy, and completeness, everything that has been written on the game birds of California.

**The Game Birds of California.* (Contribution from the University of California Museum of Vertebrate Zoology.) By JOSEPH GRINNELL, HAROLD CHILD BRYANT, and TRACY IRWIN STORER. University of California Press, Berkeley. 1918. Large 8vo; pp., x + 642. Cloth. Price, $6.00 net.

Last, but not least, the volume is a valuable manual for the conservationist. Several important species of California game birds are approaching extinction. One is already gone. Nowhere is the necessity of wise conservation set forth more clearly and convincingly. Such work is of great practical service to the State, and for this reason we hope that the book will have a wide distribution and reading. Through every citizen whom it arouses to action something will be done for the welfare and happiness of our future generations of Americans.

W. F. B.

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THE BOOK OF THE NATIONAL PARKS* One can imagine the pleasure of the traveler to the west last summer in finding a book which contains information about all the national parks and monuments he might see on his journey. Complete and up-to-date information on the parks, interestingly presented, adequately supplied with maps and illustrations, has hitherto been impossible to obtain. Perhaps it is because Mr. Yard's style is indicative of the indoor man's occasional feasting on scenery rather than the outdoor man considering it almost as much a part of life as his daily bread, that one thinks of *The Book of the National Park*s as distinctively a book for the eastern traveler.

This is as it should be, for the larger part of the United States has still to be introduced to the national parks, and it is well that the presentation should be made by one who pleads the cause of "a higher understanding of Nature's method" to take the place of that "love of beauty spiced by wonder which is the equipment for enjoyment of the average traveler of today." Mr. Yard has made an interesting grouping of his chapters by describing the parks in geological rather than geographical sequence—sedimentary parks, granite parks, volcanic parks, etc.—a device which draws attention to their dominant characteristics.

The stupendous quality of the mountains is dwelt on to greater extent than their more elusive charm. The mountaineer feels a sense of kinship with the stern high country, is at home there, while the dweller in cities is awed but chilled by them. Nature to him is best described in terms of art as a masterpiece, a composition; to the mountaineer it is best interpreted in terms of life. In still another way Mr. Yard proclaims himself to western mountaineers as with us but not yet of us—in his unfortunate conjunction of the names of Galen Clark, Clarence King, and John Muir as geologists of equal claim to consideration. It is not for the layman to question the findings of Mr. Yard's science. But to note within the limits of a page the "speculations" of a Muir overridden by the "minute investigations" and "final solution" of later geologists leads even the most unbelligerent of laymen to remind Mr. Yard that the final solution of today is not always that of tomorrow.

Having thus taken our fling at the effete east, we acknowledge with pleasure that the book is by far the most comprehensive document on the parks available to the public; that Mr. Yard has brought to the writing of it a genuine enthusiasm and love for the parks; and that thousands of visitors will gain from it an enjoyment and profit that otherwise they might never have known. M. R. P.

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* *The Book of the National Parks.* By ROBERT STERLING YARD. With maps and illustrations. Charles Scribner's Sons, New York. 1919. Pages, 420. Price, $3.00 net.

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THE BOOK OF A NATURALIST* The impression left by this book of random nature sketches is like that of fireside hours spent with a man at once a naturalist and a delightful companion. Mr. Hudson lets his memory drift back into the years, bringing to light anecdotes covering a wide range of subjects—the wild horse of the pampas, trained to domestic uses but still restless with the call of the wild; the whimsical guanaco, sportively running away with his master's only available shirt; the wile and guile of serpents and man's superstitions thereon; the heron as a table bird; the social life of rooks; the gypsy charm of foxes. Mr. Hudson is a sentimentalist self-confessed and unashamed. The daily life of wild creatures concerns him most. He has a friendship for all forms of life and loves to "converse with wild animals." However the scientist may regard this form of nature study, there is no doubt that Mr. Hudson has the gift of fascinating the average reader. Apart from his charm of style and the interest of his narratives, the book will appeal strongly to all lovers of animal life who believe that, contrary to the adage, a bird in the bush is infinitely more worth studying than two little mummies in hand in the museum. M. R. P.

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CALIFORNIA DESERT TRAILS† Mr. J. Smeaton Chase is the author of two earlier volumes entitled "Yosemite Trails" and "California Coast Trails." The present volume gives the effect of having been written to order, for the purpose of completing a series. The author made a journey to the desert—"two years continuous camping and traveling," he states—and in this book records his impressions. There is a vast amount of detail, and an interesting narrative withal, of what the author did, what his horse did, what various and sundry Indians and other inhabitants did and said. Every milestone of his progress, so to speak, the author carefully describes, every animal and plant (the latter carefully supported by their botanical names in italics)—and yet the book falls short of doing the desert justice. There is too much of the unessential, carefully written down at length. The effect is somewhat that of another traveler who was unable to see the forest because of the trees.

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* *The Book of a Naturalist.* By W. H. HUDSON. George H. Doran Company, New York. Pages, 360. Price, $3.50 net.

† *California Desert Trails.* By J. SMEATON CHASE. Houghton Mifflin Company, Boston and New York. Price, $3.00 net.

Still, the California deserts are little known to travelers. Mr. Chase shows that they are accessible; that they may be lived in, with some hardship, and enjoyed; that they are full of interest. He should be thanked for his personal impressions of these regions, which he so pleasantly records.

The book is well printed and well illustrated. A little map of some sort would have helped it. There is an appendix of noticeable plants of the desert, accompanied, however, by a warning to botanists that the descriptions are not exact. A. H. A.

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VACATION TRAMPS IN NEW ENGLAND HIGHLANDS* It is perhaps too much to expect a confirmed Sierran would deliberately make a journey to New England for the express purpose of climbing mountains, though should he do so he might be agreeably surprised at their extent as well as at their beauty. But some day a Sierran may be in that vicinity by chance, and then he would do well to have with him Allen Chamberlain's little volume as a source of inspiration and information.

The New England Highlands are in four States. There are the White Mountains of New Hampshire, the Green Mountains of Vermont, Katahdin in Maine, which Mr. Chamberlain calls the most imposing mountain east of the Rockies, and finally the low but strong-backed Berkshires of Massachusetts. In fact, as Mr. Chamberlain says, "According to the map, this is a very tiny corner of the earth that we live in, but to those who make a practice of searching out its attractive spots it soon becomes evident that one life will not be sufficient to exhaust the possibilities."

Allen Chamberlain knows his New England better than the average man knows his native land, but he is familiar with other parts of the country too. Many Sierra Club members will recall him as a genial companion and very competent mountaineer. His personality shines through even such a compact and modest little book as this *Vacation Tramps,* and to read it is like swinging along the trail again in his company. F. P. F.

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A YEAR WITH A WHALER† The author, in a breezy, interesting style, tells the story of his cruise to equatorial and arctic waters in a craft once despised and still ofttimes rejected by deep-sea sailormen. The book is by no means a literary gem, but with Dana's "Two Years Before the Mast" fresh in our memory, our standard for tales of the sea may be too severe to permit us to do this work full justice. Again, one may incline to be prejudiced against a "landlubber" who, having been warned of the hardships to be expected on a whaling vessel, insisted upon shipping "for the adventure of the thing, because he wanted to go," and then made at least two desperate attempts to desert. However, the book is well worth reading for its excellent descriptions of the habits of whales, seal, walrus, and polar bears, as well as accounts of adventures in bagging them. HOMER T. MILLER

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* *Vacation Tramps in New England Highlands.* By ALLEN CHAMBERLAIN. Illustrated. Houghton Mifflin Company, Boston and New York. 1919.

† *A Year with a Whaler.* By WALTER NOBLE BURNS. The Macmillan Company, New York. 1919. Price, $2.00.

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FIELD AND STUDY* Another welcome book has come to us from John Burroughs in *Field and Study*. The book has two parts, of which the first and larger is taken up by Mr. Burroughs' characteristic and inimitable sketches of plant and animal life. Birds come in here for the predominant share of his attention—birds in all phases, nesting, mating, migrating. But plants, insects, wild animals, and even friend dog, are also presented to us. In all these sketches we find Mr. Burroughs the close observer of the facts of nature, who pursues his inquiries with sympathy and imagination, so that we get from him accurate knowledge which is a pleasure in the acquiring. Under his virile touch the search for a bird's-nest is like the hunt for a treasure island. He says: "Nature lore is a mixture of love and knowledge, and it comes more by way of the heart than of the head." It is perhaps because of this attitude that John Burroughs has achieved his impressive position in the realm of nature study. But it is equally a pleasure to read these sketches on account of their style, limpid clear and beautiful.

In the latter portion of the volume Mr. Burroughs discusses various broad topics, such as literature, religion, evolution, etc. An illuminating appraisal of his friend, Walt Whitman, is the best of this section. In treating his other topics, Mr. Burroughs is usually content to raise fundamental questions without endeavoring to give answers, a method not wholly satisfactory. W. W. LYMAN, JR.

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ADVENTURES IN ALASKA† This book by S. Hall Young, the owner of John Muir's little "Stickeen," is a collection of eight stories of actual adventure in Alaska, both at Nome and in the Klondyke. The author is a minister who has spent forty years of his life in Alaska, meeting the need which such a new land of wild life and adventure must have for the missionary. The stories are interesting, well told, and wholesome; the descriptions are good, and one feels upon reading these episodes of real life that the author truly understood his work, was remarkably successful in it, and that the purpose and hope of his little book, to "afford healthy-minded young people a true idea of some phases of human and animal life there" (in Alaska), has been achieved.

DAISYMAY HUBER

***Field and Study*. By JOHN BURROUGHS. Houghton Mifflin Company, Boston and New York. Price, $1.50 net.

†*Adventures in Alaska*. By S. HALL YOUNG. Illustrated. F. H. Revell Company. 1919. Pages, 181. Price, $1.25 net.

THE LOG OF A TIMBER CRUISER[*] It is not surprising that young men go into the Forest Service. Here is a record by one of the Service men of six months' "cruising" in the mountains of southern New Mexico, a record of the actual life and day-to-day duties of these men in the field—a record of grilling hard work, but work that the seasoned, trained-down man delights in being able to do, and full of the fascination of constant novelty.

This particular record is unaffected, full of spirit, full of the humor which animates real American men-folks when they live together "close to nature"—and the author and the party of which he was one are all interesting people. The technical side of the timber-cruiser's duties is simply brought out, as well as his hard work and his simple but real pleasures. Truly, if this is the Forest Service's timber cruising, there will never be any lack of recruits for a service which offers so much that is satisfying to the appetite of keen young men for action and experience with a little spice of adventure.

The illustrations are excellent; one wonders where the author found opportunity for making such good and appropriate photographs.

A. H. A.

* * *

THE GRIZZLY BEAR[†] "Man's loyal companion," Mr. Mills calls the grizzly bear. For most of us this is a new conception of the dread beast of nursery days. But however we have been accustomed to thinking of him, surely there is no animal in which grown-ups are so readily interested, nor which so entrances the children. I remember watching in an audience the rapt faces of a group of children to whom, in his inimitable way, Mr. Mills was recounting the story included in this volume of Johnny and Jenny, the twin bears who grew up in his house. Lion cubs or tiger kittens could never so have enthralled them. Mr. Mills make us feel all the human qualities of the bears as a few rare authors have known how to do with dogs. This collection of bear stories and observations, the fruit of many years intimacy with grizzly bears, is a book for every one, but perhaps above all for the growing boy.

M. R. P.

* * *

THE ADVENTURES OF A NATURE GUIDE[‡] Nature writers generally consider themselves happy in the description of a single incident like the finding of a woodpecker's nest. With Mr. Mills such an incident is apt to be only a link in an endless chain of experience. He revisits the woodpecker's nest in autumn and finds a chipmunk evicting a field-mouse from it, to be routed out himself by a bluebird next spring. Years of observation in both summer and winter have given Mr. Mills a wealth of interesting material apparently inexhaustible. "A good time for a vacation is whenever you can spare the time," is his motto. One cannot read this latest book, as full of enthusiasm as the first, without agreeing with him not only that "the wilderness is one of the safest and the most interesting places on earth," but also that "People are made and nations perpetuated through the right use of leisure time." M. R. P.

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[*] *The Log of a Timber Cruiser.* By WILLIAM PINKNEY LAWSON. Duffield & Company, New York. 1915.

[†] *The Grizzly Bear.* By ENOS A. MILLS. Illustrated. Houghton Mifflin Company, Boston and New York. 1919. Pages, 284. Price, $2.00 net.

[‡] *The Adventures of a Nature Guide.* By ENOS A. MILLS. Illustrated. Doubleday Page & Company, New York. Pages, 271.

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NEW RIVERS OF THE NORTH[*] The sub-title describes this book as the "yarn of two amateur explorers." It is a yarn well spun and well worth the spinning. Several of the rivers traversed are not, indeed, as unfamiliar as the title would denote. Almost the identical course of the two amateur explorers over the headwaters of the Fraser and the Peace was described two years ago in these columns. The Hay River, however, flowing into Great Slave Lake, is a more unknown field, and the visit to the wonderful Alexandra Falls makes a fine climax to the narrative. Much of the journey was made in a canvas canoe, the "Blunderbuss." Mr. Footner and his companion reached the Hay River by trail from Fort Vermilion on the Peace River. The story is told in straightforward, manly fashion, boyishly full of fun and enthusiasm. The photographs were taken by the two adventurers and add much to the book's charm. M. R. P.

⁂

THE APPLEWOMAN OF THE KLICKITAT[†] How an eastern woman, entirely inexperienced in in farming matters, made a success of developing a quarter-section of Government land into an orchard is the theme of this book. It is presented in quasi-fiction form, its characters drawn, apparently, from neighbors or inhabitants of that region of Washington. In spite of the fact that the book is more of a photograph-album than a painting, it is not without its value in picturing one phase of development in the West. M. R. P.

⁂

Our fellow club member and mountaineer, LeRoy Jeffers, has during the past year been an industrious propagator of the gospel of the mountains and the outdoor life. The May and June numbers of *Scribner's Magazine* contained beautifully illustrated articles from his pen on "Memories of the Mountains of California" and "Mountaineering in the Sierra Nevada." His two articles on the Grand Cañon appeared in the July number of *Travel* and the September number of *Motor Life.*

---

[*] *New Rivers of the North.* By HULBERT FOOTNER. With photographs by Auville Eager and the author. George H. Doran Company, New York. Pages, 281. Price, $2.00 net.

[†] *The Applewoman of the Klickitat.* By ANNA VAN RENSSELAER MORRIS. Illustrated. Duffield & Co., New York. Pages, 271. Price, $1.75 net.

In an earlier number of the latter had appeared his account of "Mountaineering in the Canadian Rockies." Doubtless these articles and illustrations did much to swell the great tide of visitors which set toward the national parks last summer. W. F. B.

. . .

The Bulletins of the Mazama Club and of the Mountaineers contain much that is of interest to the members of the Sierra Club. A limited number are on sale at the club rooms. The price of Mazama is 75 cents, of the Mountaineer 50 cents.

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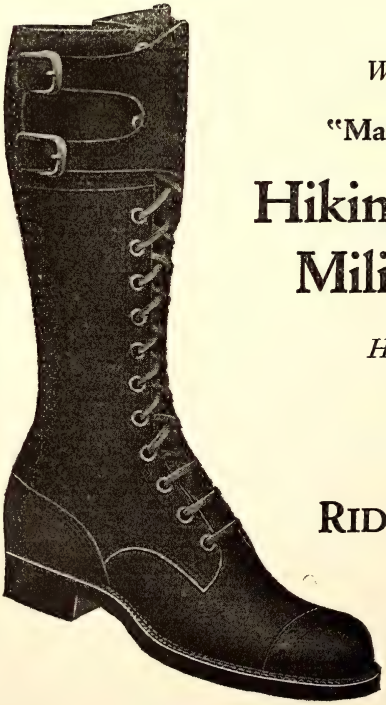

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VOLUME XI NUMBER 2

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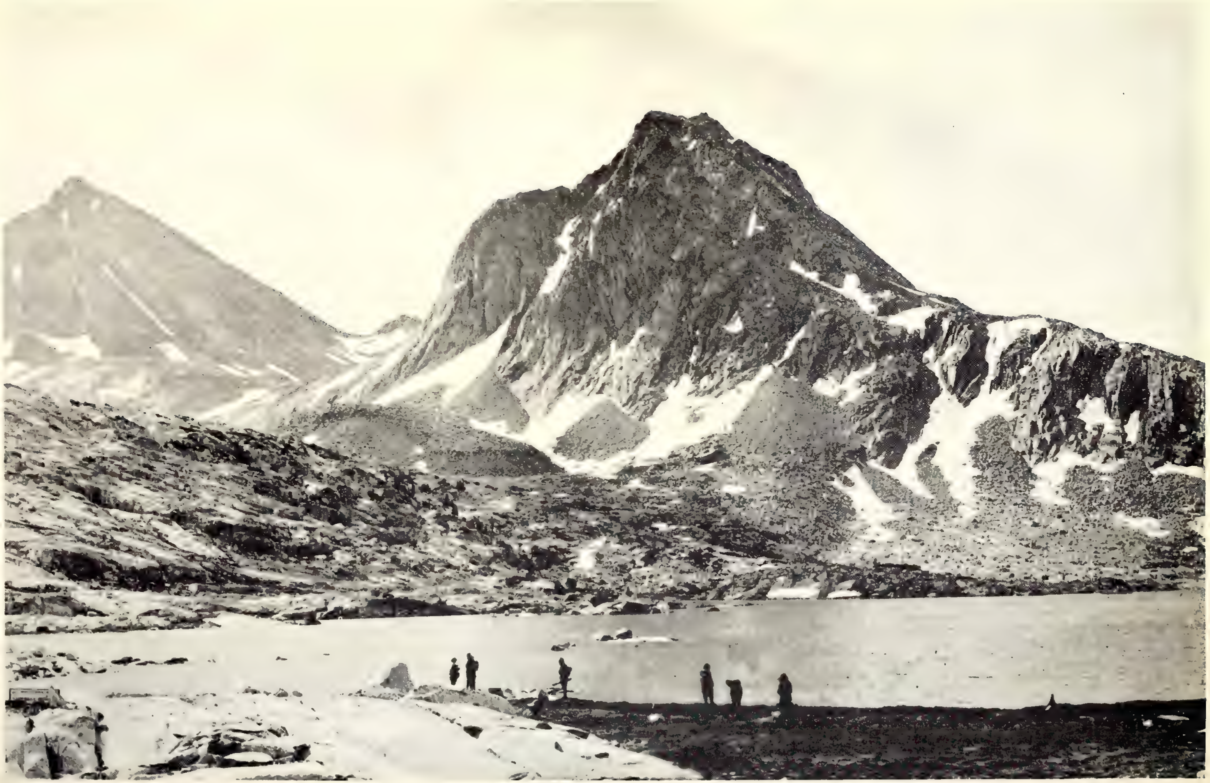


MOUNT HUXLEY
Photo by Walter L. Huber

SIERRA CLUB BULLETIN

VOLUME XI NUMBER 2

SAN FRANCISCO
JANUARY
1921

NO TRESPASSING!

By

John Barton Payne, *Secretary of the Interior*

No other country in the world has such wonderful national parks as our own. To persons who know the health, recreation, and pleasure afforded to the people by these permanent breathing-places, filled as they are with natural objects of the greatest interest and with wild animals, birds, and flowers, it would seem that the American people should insist that they be permanently preserved, free from every form of commercialization.

To me it is perfectly plain that the wise course for the Government is to hold that when a national park is once set aside it shall remain the property of the whole people forever, and shall not be trespassed upon by any business or commercial use. Unless this policy is followed, encroachment will ultimately impair, if not destroy, our national parks.

The argument of utility should not be entertained. Indeed, it can nearly always be met by the plain statement that the water sought for reclamation and power purposes does not remain imprisoned in the parks but may be utilized after it flows from them.

COLBY PASS AND THE BLACK KAWEAH

By James S. Hutchinson

◆

OF many factors which determined for us the region for our summer's outing, there were three outstanding ones: *First:* Mr. McDuffie had assembled for the trip a most congenial and delightful party, and had told us of the beauties and charms of Roaring River Basin and the Kaweah Peaks country. *Second:* It is eight miles, as the crow flies, from the Whaleback in Cloudy Cañon across the Great Western Divide to Junction Meadow on the Kern; it is sixty-five miles by the shortest trail between these same points (via Turtle and Black Rock passes); it is seventy miles by the next shortest trail (via Kings Cañon, Bubbs Creek, and Shepard Pass). Mr. Colby had said that, from the lay of the land, a pack-train ought to go straight across and save two days between the Kings and Mount Whitney.* *Third:* On many occasions, from the vicinity of Brewer, I had viewed the Kaweahs—ragged and savage peaks, dominated from every viewpoint by the unclimbed Black Kaweah. There were plenty of other inducements, but what more were required?

Our party† gathered at Giant Forest on July 16, and there was met by our pack-train, in charge of Ernest E. McKee, with Onis Imus Brown assistant packer and cook. Later during the trip we were to be joined by three other members.‡ Before leaving the forest we climbed Moro Rock and there obtained that most wonderful view of the Kaweah region and the Great Western Divide, and, through the notch at the head of Deer Creek (10,700 feet), the lowest saddle north of Coyote Pass, got our first view of the Black Kaweah—in the sunset light looking fierce, threatening, and defiant.

On the morning of July 18 we left for Roaring River, taking the "J. O." Pass trail and stopping over at Clover Creek for a trip to Twin Lakes. Some of the party ascended Silliman, the most prominent peak of the Silliman Crest and one commanding a broad and extended view of the Great Western Divide. Again, from here, the Black Kaweah was the most dominant peak in the whole horizon.

---

* See Sierra Club Bulletin, vol. IX, No. 1, page 3.

† Mr. and Mrs. Duncan McDuffie, Mrs. William Knowles, Mr. F. C. Torrey, Mr. Charles A. Noble, Mr. Charles A. Noble, Jr., Col. W. H. Williams, Mr. J. S. Hutchinson.

‡ Mr. and Mrs. Arthur Elston, Mr. Vernon Kellogg.

Upon arriving at Roaring River we found Mr. and Mrs. Ralph Merritt in a beautiful camp just above the bridge. We established our camp a mile above them, in Cloudy Cañon, a short distance above the junction of Deadman* (elevation, 7600 feet). From this point it is possible to make many delightful side-trips—Moraine Meadow, Avalanche Pass, Sphinx Lakes, Josephine Lake, Sentinel Dome, Mount Brewer, etc. Another trip which I would suggest, but I am not sure that it can be made, is along Glacier Ridge—a wonderfully glaciated ridge dividing Cloudy and Deadman cañons.

One very fine trip which should not be missed is up Deadman Cañon. We wished to explore this cañon with some degree of care, and so decided to take our pack-train and spend one night at its upper end. In this cañon are a number of beautiful meadows filled with wonderful wild flowers. After traveling for an hour you come to the grave of a French sheep-herder, murdered there in 1887. It is this grave which gives the cañon its name. Our camp was made in an ideal spot, on a glacial bench, with a wonderful outlook in all directions and near a point where the stream comes tumbling down from Bird (or Dollar) Lake. That night, long after dark, we were delighted by a most unexpected visit from Mr. Le Conte, who dropped in on us from Horse Corral Meadow.

The next morning some of the party returned with the packs to our Cloudy Cañon camp, while the rest ascended to the head of Deadman and crossed Glacier Ridge into the headwaters of Cloudy Cañon. From near the head of Deadman, looking back, one obtains a view of the finest U-shaped glacial cañon in the Sierra. The view as you cross the ridge into Cloudy Cañon is most impressive, for you have the Great Western Divide from Brewer to Sawtooth laid out distinctly before you. We were particularly absorbed with the stretch from Milestone to Triple Divide, because we knew that somewhere there—just where we could not tell—lay the saddle which Mr. Colby believed to be passable.† The saddle between Triple Divide and the next peak north—a very red mountain—looked best, but we knew it was not the place we were after.‡

---

* Much confusion has arisen over the names of these cañons. The original Tehipite sheet has the names correct—that is, Deadman Cañon to the west and Cloudy Cañon to the east. On the more recent sheets the names are incorrectly given, the western cañon being called Copper and the eastern Deadman.

† See Sierra Club Bulletin, vol. IX, No. 1, page 2.

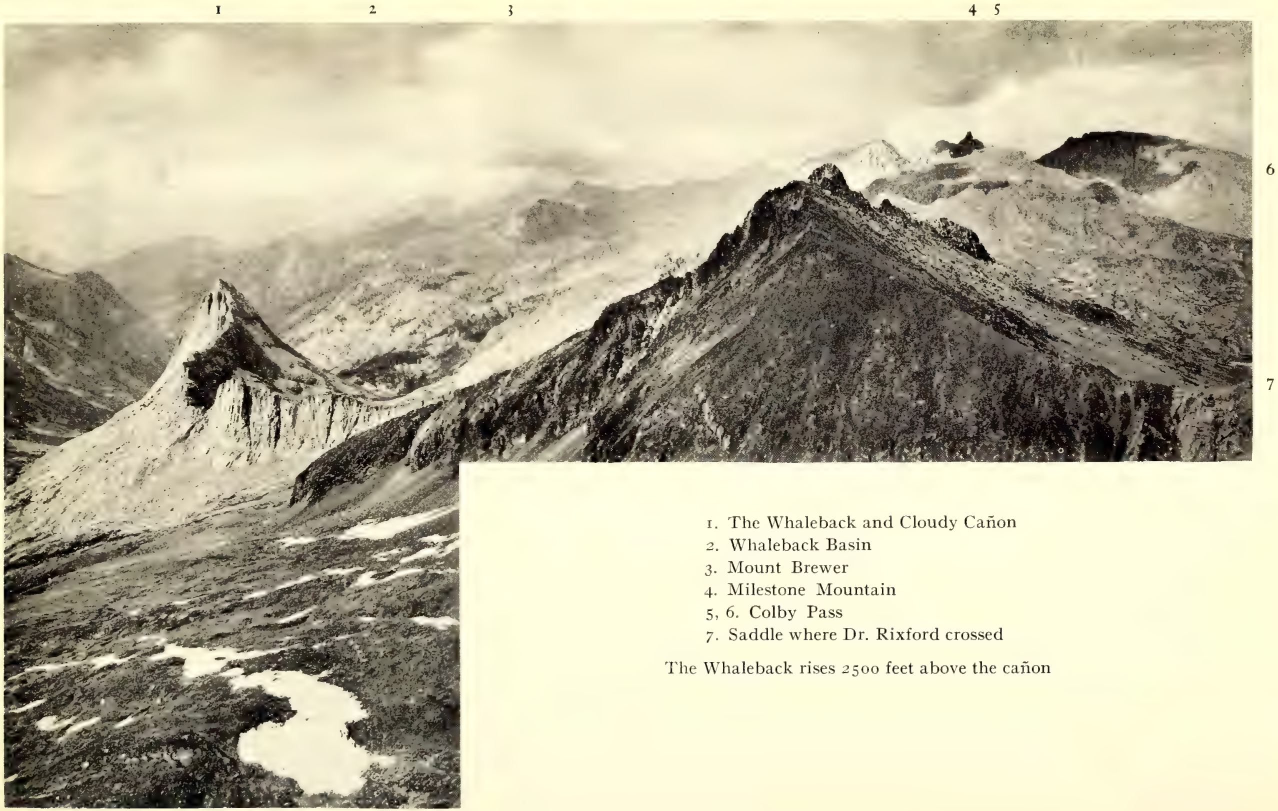
‡ See Sierra Club Bulletin, vol. VIII, No. 3, page 167.

Mr. Merritt had told us that Dr. Rixford with a party of five had disappeared up Cloudy Cañon about ten days before, incidentally looking for Colby Pass. As the party had not returned, he surmised that they had gotten out of the cañon, possibly over that pass. While we were at our point of vantage on Glacier Ridge we chanced to notice across a snow-field just below us, on the Cloudy Cañon side, rather fresh hoof-prints. Following these we found they led, by a very steep and rough trail, to Miner's Pass and then along the ridge westward to the Elizabeth Pass of Stewart Edward White. Of course, we did not know whose tracks these were, but immediately thought of the Doctor's party. At this point we had reached our nearest approach thus far to the Black Kaweah, four miles distant, and it certainly appeared a rough and treacherous peak—sheer walls across the whole northern face, and its knife-edge scarred and broken by great clefts.

From Miner's Pass it was a long descent of 4700 feet and a long distance back to our Cloudy Cañon camp, going, as we did, the whole length of Cloudy Cañon; but the trip was full of inspiring views and points of interest. To see the Whaleback alone is worth a long trip into the region. It was just dusk when we reached camp, quite fatigued; but a very excellent dinner, culminating with one of Mrs. Knowles' celebrated tapioca puddings, was the end of a perfect day.

From our observations taken when crossing Glacier Ridge, we knew that Colby Pass could be reached only by first getting into a large basin east of the Whaleback. Accordingly, on July 31, we moved to Upper Cloudy Camp (elevation, 9100 feet), at a meadow just west of the north end of the Whaleback. Merritt had told us that sheep had recently been over a new trail leading eastward out of Cloudy Cañon half a mile or so north of Whaleback Creek. McDuffie followed this and found that it led up toward Table Creek, and not into the Whaleback Basin. He thereupon cut across an intervening ridge, southward, and followed up Whaleback Creek until he looked into the basin. Returning, he reported signs of very old sheep-trails here and there on the northern end of the Whaleback, but nothing continuous.

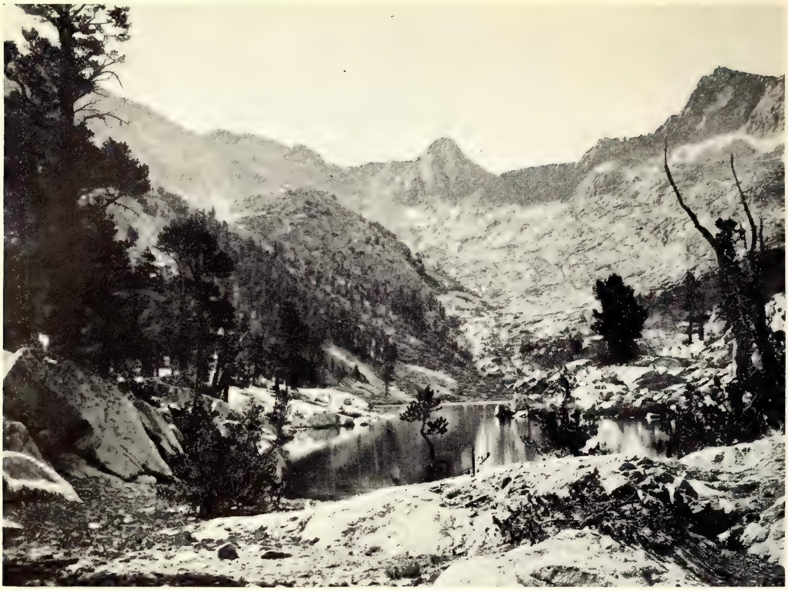
During the afternoon Brown and I explored all across the northwestern shoulder of the Whaleback. The whole slope was dotted with misleading monuments leading in all directions. After a very



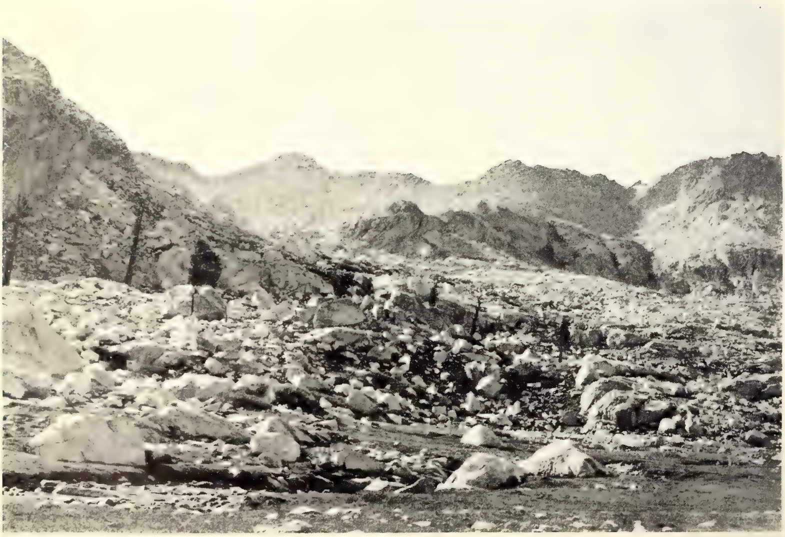
1. The Whaleback and Cloudy Cañon
2. Whaleback Basin
3. Mount Brewer
4. Milestone Mountain
5, 6. Colby Pass
7. Saddle where Dr. Rixford crossed

The Whaleback rises 2500 feet above the cañon

FROM TRIPLE DIVIDE PEAK—LOOKING NORTH ALONG THE GREAT WESTERN DIVIDE
Photo by J. S. Hutchinson



COLBY PASS FROM THE WEST
The unmapped lake is in the foreground
Photo by J. S. Hutchinson



COLBY PASS FROM THE EAST
Taken from lower end of Milestone Bowl
Photo by J. S. Hutchinson

long search, a way through was found, but there was one terribly bad place where a trail must be constructed. We then went up into the Whaleback Basin. The route first followed up a rather narrow cañon near the stream, then crossed to the north side, went over some projecting buttresses, and afterward, descending, crossed through some willows to the south side. Here the walls recede and the country opens into a large-sized basin with a fair meadow. There are no trees except on the north and northeast sides of the basin. We explored for a possible camping-place, and located one, tentatively, on a glacial shelf about 200 feet above the meadow, on the north end of the basin, beside a stream which comes down from the north. We then returned hurriedly to the bad place in the trail. It certainly was bad. After working at it for a couple of hours, I asked Brown if he would get the animals through, to which he made one of his favorite and characteristic replies: "There ain't nothin' holdin' me back, is there?" Just below this place a large dead tree blocked the only possible route, and this would have to be cut out on the following morning. Upon reaching camp and reporting progress, there was much rejoicing, for all knew that if a camp was established in the Whaleback Basin we could readily explore every saddle, crack, and notch in the ridge for a way across.

The bad place referred to was like a zigzag stairway, very steep indeed, and up a rocky chute, or chimney. At first there was a straight stretch upward about thirty feet, close beside a rocky wall; then an abrupt turn back for fifteen feet up to a little ledge; then another abrupt turn of twenty feet, with a final jump-up of three feet over a slippery rock. The turns were so short that the animals could barely make them, and extreme care had to be exercised to prevent their stepping off into space. The packs were not heavy, for at least half of our outfit had been left at our permanent camp. McKee and Brown were supervising the ascent and asked me to make a try-out with one of our best mules, a spirited animal. Taking the lead-chain, I started up the stairs. The pack was not wide, but halfway up the first stretch it struck the rock-wall; the mule lost his balance and started over backward. I braced myself for the shock, but was jerked completely off my feet. The poor mule landed on top of his pack in the rocks at the foot of the stairs. We removed the pack and tried again with only the saddle on, McKee taking his turn at leading, but the animal had lost his nerve and in a moment was again on his back at the bottom. No damage, however, was done, except a broken saddle. By this time the mule was trembling like an aspen-leaf, and we turned him loose, with the idea of taking him up the following day. Next we tried one of the best horses, and in an instant he was lying on his back in the rocks, the pack under him and his legs pointing upward. Only one animal made the ascent with his pack. A second one got halfway up and then was unpacked. In every instance, at the last stretch, the animals were steadied with ropes about their necks, for fear they would turn over, an act which would have been absolutely fatal. The mule which made the first attempt, in ten minutes after the incident, had forgotten all about his troubles, was searching for the choice morsels of grass growing in the rocks, and when all the others had gone up went through without difficulty.

Above this stairway is a small flat area, where we repacked, and by two o'clock we were in camp on the glacial shelf at the north side of the Whaleback Basin (elevation, 10,000 feet), a wonderfully beautiful spot in a grove of trees beside a fine stream (a small branch of the main stream), the water plunging down in beautiful little cascades and waterfalls, interspersed with fine little pools, and surrounded by an innumerable variety of wonderful wild flowers. From this shelf we could look south up the full length of the Whaleback Basin and southwest across the meadow to the knife-edge crest of the Whaleback—from beginning to end a succession of weird-looking gargoyles, pinnacles, and spires, particularly noticeable as the rays of the declining sun shone through and across them.

The afternoon was spent in exploring up a ridge which bounds the Whaleback Basin on the northeast. From this ridge we got a good view of Milestone and of the great cirque described by Mr. Colby, also of a long stretch of the crest line; but even now, with powerful glasses, we deliberated long and earnestly as to which was the real pass. We looked down on an unmapped lake, a beautiful sheet of water, two-thirds of a mile in length by one-third in width. Colby had questioned the possibility of getting around its shores; so from our point of vantage we examined carefully with the glasses the north shore of the lake. It appeared to be impassable—a smooth granite buttress, about midway along, extending from the cliffs above out into deep water. Possibly one could get around by climbing up 500 feet over the buttress. On our return trip to camp we followed the southern shore of the lake, starting at its eastern end. By very careful maneuvering one could take animals around the southern shore, with the exception of just one place near the eastern end, where a huge rock-slide has come down, blocking the route for one hundred yards or more.

That night it was decided that on the following day we would explore afoot up to the alleged pass to see how far the animals could be taken. Brown and McKee would take their horses as far as possible. These two men had entered into the quest for a pass with great zeal and enthusiasm. McKee's brother Earl had been up the Kern-Kaweah on foot to a point not far from the pass, and Ernest wished to connect up with his brother's trail. Brown was always in for trying anything once—the more difficult, the better. He had never been in the Kern and wanted to get there. The idea of opening a new route appealed to their imagination.

Having explored the south side of the lake the day before and found it impassable, we took the north side. Those on foot had reached the middle of the north shore when the horsemen arrived, having ridden all the way from camp. So far, so good. Then came the slick buttress running down into deep emerald waters. A steep cleft choked with boulders ran a little way up the slope to a horizontal shelf five feet wide, which in turn ran fifty yards clear across the buttress. Brown and McKee immediately set to work to remove the boulders from the choked cleft, and in a short time had their horses on the shelf. From here the traveling across the buttress was comparatively easy. This shelf is the only possible route around the shore of the lake.

A short distance beyond the shelf is an extensive willow thicket, watered by many little branches of a stream which tumbles down from a good-sized lake above. McKee plunged through this on his horse, following the remnants of an old circuitous sheep-trail. Brown rode his horse along the shore-end of the thicket, on a shelf in the lake, the water reaching up to the stirrups.

The course from here is up a small rather rocky gorge, with here and there signs of an old sheep-trail. Farther along the way leads into an extensive rock-pile, and it took Brown and McKee some little time to work their way through. Above the rock-pile the country flattens considerably and opens into a narrow alpine valley, with tiny streams running through mossy banks. Here and there were a few scattered albicaulis. The alpine valley leads directly to the base of the last steep rocky ascent. This ascent rose probably 1000 feet in elevation to the supposed pass, and for the whole distance lay at an angle of forty degrees. The way was up a broad chute 300 feet in width, bounded north and south by rocky walls, gradually converging as they neared the saddle. The forty-degree slope was composed of rocks and boulders of all sizes, scattered about promiscuously and all imbedded in loose granite, gravel, and sand. In a few places patches of snow lay in the chute.

Those afoot ascended rapidly, using here and there the remnants of an old sheep-trail which had withstood the ravages of slides and weathering, looking back now and then to see how the horsemen had progressed. Each time we could see that they were coming steadily on. An hour's climb brought us to the summit (12,000 feet), and for the first time we knew it was the pass. It lies about one and a half miles from Milestone and is the first real saddle southwest of that mountain. It is about three miles in a straight line southeast of the northern end of the Whaleback. By our trail it is about five. The east side was an easy, gentle slope down toward Milestone Bowl,* and then on down to the cañon of the Kern-Kaweah. The pass once gained, the rest would be easy. We all waited at the pass for an hour, enjoying the view and watching the men as they built stretches of the trail and then moved their horses gradually upward. They moved, slid, and rolled tons and tons of rocks. None was too large for them to tackle. Sometimes a small avalanche would go sweeping down, perhaps carrying away portions of the trail already built by them. They were as strong as giants, and the high altitude seemed to make little difference in their energy. Someone jokingly remarked that the topographical maps would have to be altered to meet the changed conditions wrought by these assiduous trail-builders.

After watching the trail-workers for an hour or more, until the men were perhaps one-third of the way up the slope, the members of the party decided to return to camp. I remained to lend encouragement to the trail-builders, assisting as best I could, and frequently taking photographs as the work progressed. Little by little the horses were gotten nearer and nearer the pass—now twenty-five feet, now fifty or even one hundred feet at a stretch. At exactly 1:25

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* Not "Bow." See SIERRA CLUB BULLETIN, vol. II, No. 3, page 188.

we reached the pass and heard from far in the distance a mighty shout. Our party at the lake far below had been watching with glasses as the advance was made up the rocky slope.

From the pass to Junction Meadow (via the Kern-Kaweah) the way was open. Professor Dudley had brought animals up the stream.* Abernathy had been up to the pass with burros.† Earl McKee had been up from the Kern afoot, and had reported the going fairly good, except at the lower end of the river, where packs must be carried a short distance. The only question remaining was: Could the pack-animals be brought up the last thousand feet to the pass? Our saddle-horses had been led up, but could the pack-animals navigate the same trail? There were two particularly bad places in this slope—one, where a large boulder projected into the trail so that the stirrups struck in passing; the other, where two large boulders came together too close for the packs to pass.

The return to our camp at the Whaleback Basin took about two hours. Reaching there we found that McDuffie had returned down Cloudy Cañon to our main camp to greet our newcomers and to escort them up to the basin camp the following day. He left word that we should decide whether the pass should be attempted with the packs. That night around our rousing camp-fire we discussed the advisability of the attempt. The unanimous vote was "Yes."

What is more glorious than these evenings in camp?—the twilight fading into dark, and then the utter darkness beyond the camp-fire's glow; the absolute stillness, save for the crackling fire with its myriads of firefly sparks; the murmuring brook near by; now and then the crash of a rock from the Whaleback cliffs across the meadow; then there are good friends gathered in the camp-fire's genial warmth, listening as Mrs. McDuffie reads thrilling tales of James Capen Adams, mountaineer and grizzly-bear hunter, Clarence King, and other wild tales of adventure;—the fire dies to glowing coals, and as the moon rises over the great wall of the Western Divide, flooding the basin with soft, mellow light, each one seeks his tamarack bedchamber for a peaceful sleep, to dream of untrodden trails, unpassed passes, and unknown Kern-Kaweahs beyond. At such times, truly "All's well with the world."

The next morning at daybreak McKee and Brown were off with the pack-animals, headed for our lower camp, and the men of the party were to meet the pack-train near Cloudy Cañon upon its return and help over the difficult place at the stairway. Colonel Williams and I returned to the rough place and did some further work on the staircase. We also spent more than an hour exploring all over the face of the slope for a possible way around. Many times we thought we had found it, but inevitably were led to some smooth granite slope where only blasting would make a trail. We then carefully monumented a good route all the way down to Cloudy Cañon, and on the east side of the crossing placed a pile of stones on a large boulder. The crossing is at the northern end of the meadow, just at the edge of the timber.

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* See Sierra Club Bulletin, vol. II, No. 3, p. 188.

† See Sierra Club Bulletin, vol. IX, No. 1, p. 3.

McDuffie, with the Elstons and Vernon Kellogg, reached our Upper Cloudy Camp at five o'clock, and shortly the pack-train arrived. By 5:45 we were at the staircase. Getting the packs and animals beyond this took until eight o'clock. While repacking darkness overtook us and it commenced to rain.

We had sent our new arrivals ahead, giving them the general direction and the location of our camp, telling them that they should be in camp by seven o'clock. After repacking, we followed, going fairly rapidly until we reached the lower end of the Whaleback Basin. By this time it was pitch dark. In the daylight it was easy going, winding here and there in serpentine fashion through the rocks and by the meandering stream flowing deep in mossy banks, here and there twisting and turning between boulders thrown down from the cliffs of the Whaleback. For a time the flash-light aided us, but soon the maze became so complicated that we were completely tangled up and had to retrace our steps many times and start anew. It was a most exasperating experience, for we kept falling into the stream and getting into pockets where the horses could not proceed. The lights of several camp-fires were seen on the shelf above, and we could hear the shouts of those in camp; but to get through the inky blackness and over the uneven and uncertain meadow was desperate sort of work.

At 9:30 McDuffie and I led the last of the pack-train into camp, feeling that the day's real labors were ended. As we approached we heard a shout from out the darkness of the meadow below, only to find that our newcomers had not arrived, but were lost in the darkness of the region below. A warm welcome! We got the flash-light and lanterns, and by continual calling and signaling located our friends among the rocky talus on the opposite side of the meadow.

By 10:30 our friends were welcomed to a roaring camp-fire, and, after getting into dry garments, we all partook of a hearty and much-relished dinner. We then sat about the camp-fire and listened to all the latest news, read very welcome letters, and shortly after midnight retired. As the camp-fire died down the whole of the Whaleback Basin was lighted by the glow of the full moon, making a weird and strange sight.

The next morning, after a late breakfast, we laid our plans for the day. The camp should be moved up to the north shore of the uncharted lake, and McKee and Brown would take some of the pack outfit up to the pass and cache it, thus lightening the load for the final ascent to be made the succeeding day.

Triple Divide Peak—a peak well and attractively named—thrust its head up above the tail of the Whale at the southern end of the basin, plainly visible from our bench camp. We knew that the view from that peak would be well worth while, so the two Nobles and I decided upon the climb and planned to join the rest of our party at the new camp at the lake above. In the clear mountain atmosphere the peak looked close at hand and as though it could be reached in a bee-line up the Whaleback Basin, across the tail of the Whale, and thence across an intervening depression. It was a long climb to the crest of the tail, and then to our consternation we were standing on 400-foot cliffs impossible of descent. As a result, we had to veer to the east away from our bee-line course, climb over the top of the red peak lying northeast of Triple Divide, go down to the saddle between the two peaks, and then by the Triple Divide knife-edge climb to the summit—a long, arduous trip, but worth many times the exertion required to make it. A snowball which I crushed on the topmost point went part into the Kern, part into the Kings, and part into the Kaweah. At our very feet to the west was the source of the Kaweah River, which in a distance of twenty-five miles descends nearly 12,000 feet to Three Rivers, at an elevation of 800 feet, making probably the quickest and most rapid descent of any of the streams on the western slope of the Sierra.*

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* See "The High Sierra of California." By Professor JOSEPH N. LE CONTE, in *Alpina Americana*, Number 1. Published by the American Alpine Club. 1907.

At the saddle, between Triple Divide and the red peak, we found foot-prints and a handkerchief filled with roots. Robinson Crusoe was not more surprised at Friday's prints in the sand. Had Dr. Rixford crossed here?—and, if so, where had he gone?*

Returning from Triple Divide, we took a direct course toward the west side of the Whaleback, climbed a talus-slope up the tail of the Whale to a low notch, descended into the Whaleback Basin, and thence to the unmapped lake. It was late when we came over a shoulder just before reaching the lake. The alpenglow cast a glorious pink over the Great Western Divide before us and brought out in great detail the pass for which we were headed on the morrow. Young Noble, a good climber full of energy, had led the trip practically all day and was ahead. Suddenly he shouted: "They're at the pass!" Sure enough, high up on the rocky slope below the pass, we could faintly see Brown and McKee with the tiny pack-animals moving slowly upward. Now and then they would stop for further trail-building. Finally they reached the two projecting rocks of which I have spoken as too close for the packs to pass, and shortly, through the glasses, we saw them unpacking and caching the outfit. Just at dusk they started down, and in half an hour (an incredibly short time for the distance), just as darkness had settled, rode into camp, on the north side of the lake. (Elevation, 10,500 feet.)

Plans were made for an early start. The packers said it would be necessary to build the trail in the two places where boulders obstructed the packs. Accordingly, early the next morning Williams and I started ahead with shovel and mattock to make the places passable. In an hour we were at work and kept it up steadily for two hours, filling in and raising the trail between the two closely converging rocks so that the packs would clear them, and building up and around the other projecting boulder. At 10:15, looking far down, we could see the pack-train just leaving the lake. At 12:45 thirteen people, nine pack-animals, and four saddle horses stood on Colby Pass amid great rejoicing. After a delightful luncheon, with raspberry sherbet as a dessert, a monument was built and in it Mr. Kellogg deposited the following record:

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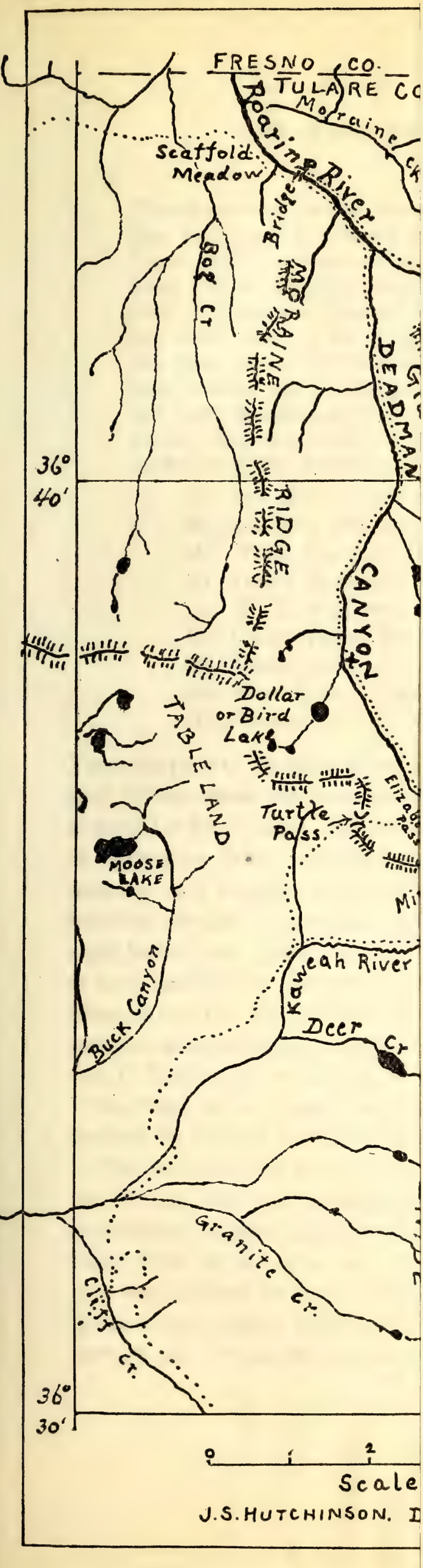
* NOTE.—Since returning home, Dr. Rixford tells us that he crossed here, carrying his packs to the saddle, and then descended a thousand feet to a lake on a shelf high above the Kern-Kaweah. Here his way was blocked by some cliffs and he was forced to camp, without feed for his burros and no fuel larger than gooseberry bushes. He thinks a trail can be found, but in his limited time could not work it out. The next day he returned over the same route and left Cloudy Cañon by Miner's Pass. It was his tracks we had seen when on Glacier Ridge.


FRESNO CO.
TULARE CO
Moraine Ck
Roaring River
Scaffold Meadow
Bridge
Bog Cr
MORAINE
RIDGE
DEADMAN
CANYON
36° 40'
Dollar or Bird Lake
TABLE LAND
MOOSE LAKE
Turtle Pass
Elizabeth Pass
Buck Canyon
Kaweah River
Kaweah
Deer Cr
Granite Cr.
Cliff Cr.
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1
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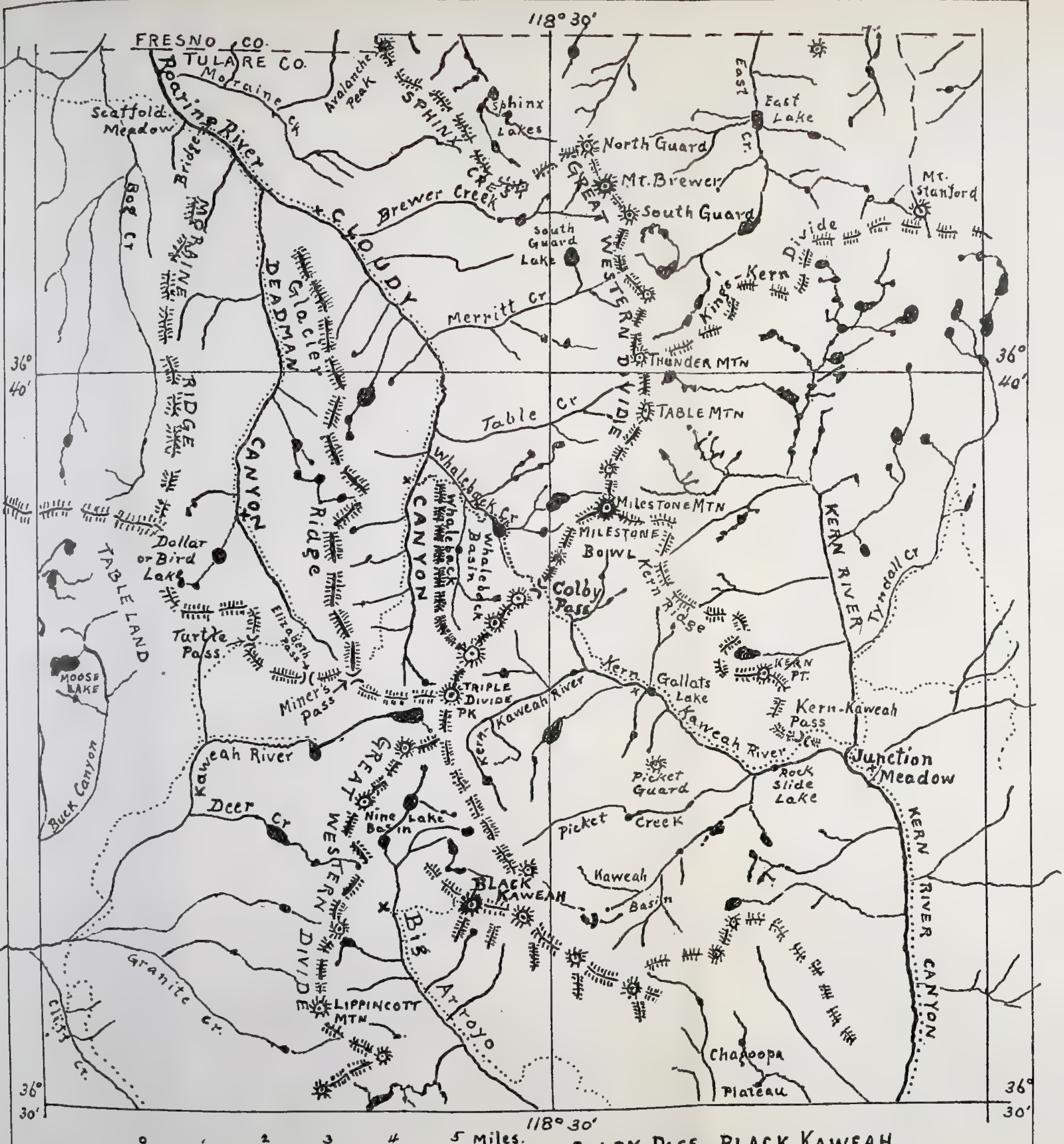
J.S.HUTCHINSON. D


118° 30'
FRESNO CO.
TULARE CO.
Roaring River
Moraine Ck
Avalanche Peak
SPHINX CREST
Sphinx Lakes
Scaffold Meadow
Bridge
MORAINE RIDGE
Bog Cr
North Guard
Mt. Brewer
South Guard
East Lake
East Cr.
Mt. Stanford
Brewer Creek
CLOUDY CANYON
South Guard Lake
GREAT WESTERN DIVIDE
Kings-Kern Divide
Glacier Ridge
DEADMAN CANYON
Merritt Cr
THUNDER MTN
36° 40'
Table Cr
TABLE MTN
Whaleback Cr
Whaleback
Whaleback Basin
MILESTONE MTN
MILESTONE BOWL
Kern Ridge
Colby Pass
KERN RIVER
Tyndall Cr
Dollar or Bird Lake
TABLE LAND
Turtle Pass
Elizabeth Pass
Miner's Pass
MOOSE LAKE
TRIPLE DIVIDE PK
Kern
Gallats Lake
KERN PT.
Kern-Kaweah Pass
Kern-Kaweah River
Kaweah River
Junction Meadow
Picket Guard
Rock Slide Lake
Buck Canyon
Deer Cr
Nine Lake Basin
Picket Creek
KERN RIVER CANYON
BLACK KAWEAH
Kaweah Basin
Big Arroyo
Granite Cr.
Cliff Cr.
LIPPINCOTT MTN
Chagoopa Plateau
36° 30'
118° 30'
0 1 2 3 4 5 Miles.
Scale
J.S. HUTCHINSON. DEC. 1920

COLBY PASS, BLACK KAWEAH AND VICINITY.

August 5, 1920.

This pass was crossed from the Roaring River side, today, by a party of thirteen persons with thirteen animals (four saddle animals and nine pack animals). The pack train was in charge of Ernest E. McKee of Badger and Onis I. Brown of Lemon Cove. There was no trail nor any indications of the previous passage of animals over the pass, except for the traces of a sheep trail. A trail was worked out by the packers and some members of the party in about eight hours, on August 4 and 5. The passage was made without accident to any animals. The members of the party were:

Mr. and Mrs. Duncan McDuffie, Berkeley, Cal.
Mr. and Mrs. Arthur Elston, Berkeley, Cal.
Mrs. Wm. Knowles, Oakland, Cal.
Mr. James Hutchinson, Berkeley, Cal.
Col. W. H. Williams, Oakland, Cal.
Mr. Chas. Noble, Berkeley, Cal.
Mr. Chas. Noble, Jr., Berkeley, Cal.
Mr. Fred Torrey, Berkeley, Cal.
Mr. Vernon Kellogg, Stanford University.

From the pass to the Kern-Kaweah River a fairly well-monumented trail follows down the north branch of that stream. The pass itself is level for fifty yards; then comes a gradual slope to the lower end of Milestone Bowl. Continuing, it leads through a fine alpine meadow in a hanging valley particularly fine, for all the way you have the wonderful snow-clad northern slope of the Kaweah Range right before you. Then you reach the forested area. As any course is here possible, we plunged down into the cañon and camped in a beautiful spot on the river just above Gallats Lake and below a large meadow with the stream meandering through it. (Elevation, 10,000 feet.) That night we celebrated with a grand repast and called it "The Feast of the Colby Passover"—and McDuffie was our Moses leading the Exodus into the Promised Land.

The next morning four of our party—Elston, Williams, and the two Nobles, who had pressing engagements at home—left us amid expressions of great regret from everyone. We all had planned to move down on the same day, but the most wonderful fishing that ever was induced the rest of us to remain a day longer. The Kern-Kaweah has had a perpetual closed season, being closed at its western end by the precipitous walls of the Great Western Divide and at its eastern end by the boulders in what Professor Dudley called the Kern-Kaweah Pass;* but for our party it certainly was an open season, and we never had such fishing before.

The following day we moved down to Junction Meadow. The trail, such as it is, follows down the north side of the stream. It is monumented rather imperfectly, but with care can be followed. In some places there is rough rockwork, in others it is brushy, but altogether is traversable by good animals. About a mile from Junction Meadow we reached some cascades and falls, where the river makes a very precipitous descent. Here the trail is forced away from the river and up a long rocky and steep chimney to the north. This is the Kern-Kaweah Pass. It zigzags back and forth again and again, is steep, but perfectly passable until within fifty feet of the top, where it is blocked by some large boulders. Here we had to unpack and carry our outfit to the top. The animals were gotten up with the assistance of ropes, a very necessary precaution to prevent their turning over backward. Finally, they were all at the top without mishap, but it was very exciting work for a time. By five P.M. we had made camp in Junction Meadow (elevation, 8100 feet), eleven miles by our trail from our Upper Cloudy Camp.

I will not dwell upon the details of our trip down the Kern to Funston Camp, to Moraine Lake, and finally to Buena Loma Camp on the Chagoopa Plateau at the base of the Gray Kaweah. This region has been ably described† and is well known to most Sierra Club members. From here the party went by trail to the extreme northwestern end of the Big Arroyo, to camp as near as possible to the Black Kaweah. I wanted to get an intimate and close-up view of the Kaweah Range, and so Mr. Torrey and I skirted around the base of the peaks on the Chagoopa Plateau, following here and there an indistinct and poorly monumented cattle-trail until it ended in a rocky talus-slope in the third recess from the east, about opposite the middle Kaweah. From here we still went westward, keeping on a level, the going pretty rough and absolutely impossible for animals, until we reached the cirque which heads at the southern base of the Black Kaweah. The country here became more open, with small scattering meadows, and we soon saw signs where cattle had been brought up directly from the Big Arroyo. The descent from this point into the Big Arroyo was long and tedious. By two o'clock we had joined the others at the extreme head of the Big Arroyo, about a mile below the Nine Lakes Basin and not more than half a mile south of where the head of Deer Creek breaks through the very low notch in the Great Western Divide to which I have referred. Here we had an alpine camp, in a delightful little grove of trees (elevation 10,300 feet), at a point very near the Black Kaweah.

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* See Sierra Club Bulletin, vol. II, No. 3, p. 188.

† See Sierra Club Bulletin, vol. VII, No. 1, p. 23.

The sight of the Black Kaweah had thrilled us again and again as we had circled the peak, and McDuffie, Brown, and I wanted to climb it.

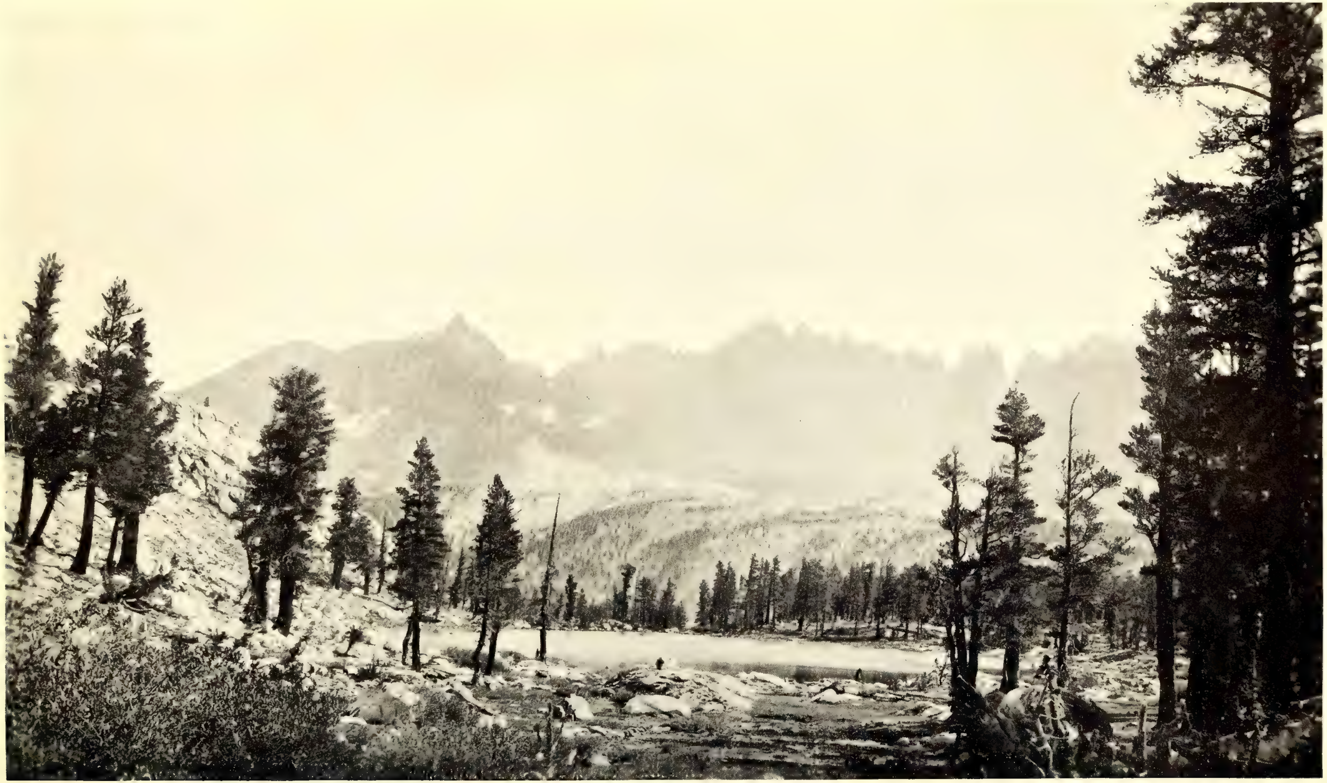
Mr. Farquhar had viewed the peak from various sides and told us he thought the most feasible line of attack would be by the buttress and knife-edge running out from the summit toward the west. I had carefully examined this knife-edge with the glasses from the north, at Miner's Pass and Triple Divide Peak, and also, the day before, from the south, when Torrey and I were skirting the southern base. It looked pretty fair, but I must confess there were some deep, ugly gashes in it, which did not appeal to me greatly. From our camp we could see that the top of the western buttress could be reached by some stiff climbing up one of several smooth avalanche-polished grooves. Upon reaching this top we would then have a fairly near view of the summit of the mountain and could decide on our future course.

The following morning McDuffie, Brown, and I were off at 5:40, carrying with us for emergency fifty feet of rope. In two hours we were at the top of the buttress. The view of the peak from this point was absolutely appalling—the knife-edge running up to the peak, and the peak itself seamed, cracked, scarred, and broken by weathering as on no other mountain we had ever climbed; the whole ridge appeared to be disintegrating rapidly. McDuffie jestingly said we had better hurry over before it should fall to pieces.

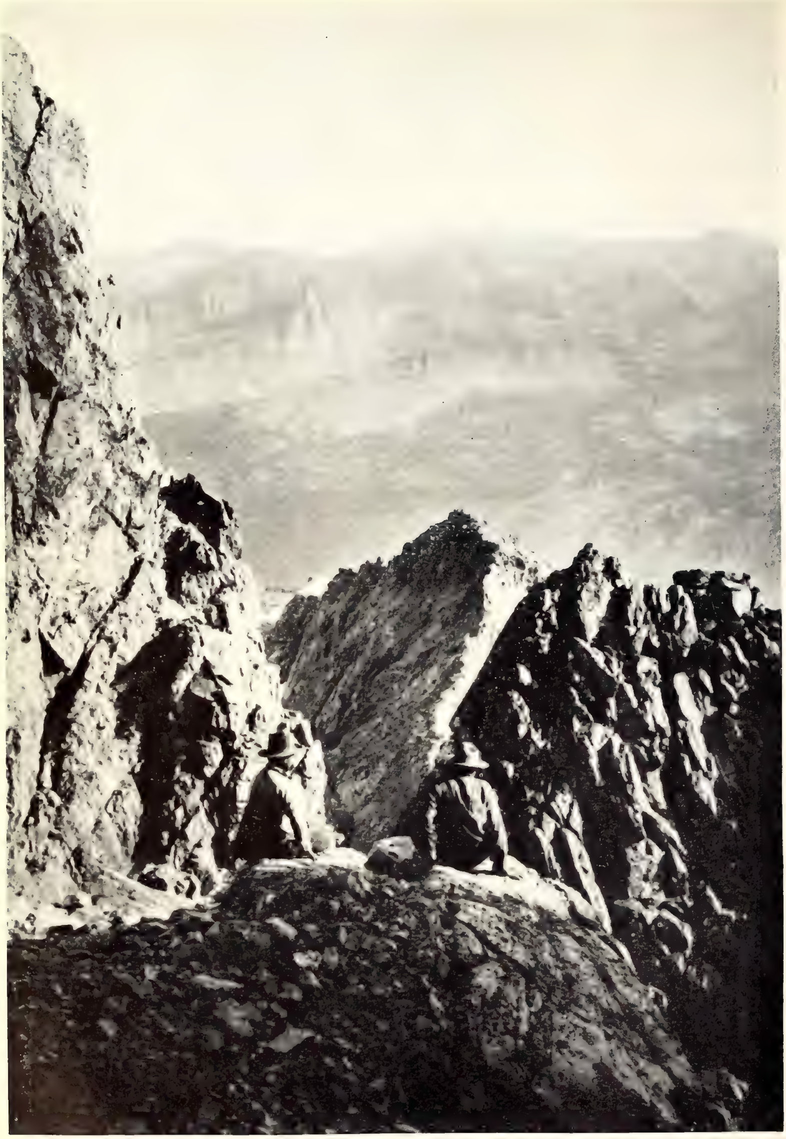
From our viewpoint, the best possible route appeared to be along the knife-edge; but again we saw the ugly clefts in several places. One in particular appeared on our side to be most uninviting, but the thought that possibly the north side at that place might be sufficiently broken to get a foothold led us on. We went up and down, around, across, over, and under boulders and broken slabs of granite, always on the alert to prevent slipping and overbalancing, every muscle tense and ready to respond. Our footsteps followed a most uncertain zigzag course, and had they been plotted would have indicated anything but a temperance movement. The way those ragged rocks were broken, splintered, massed, and piled together, helter-skelter, would have rejoiced the heart of a cubist artist. Again and again I was reminded of the cubist painting in Mr. Torrey's home—"The Nude Descending the Stairs."

Slowly, very slowly, we progressed along the knife-edge, up and down, around clefts and breaks, always in doubt as to what was fifty feet ahead of us. Finally, at a point perhaps a quarter of a mile from the summit and six hundred feet below it, we came upon the deepest notch of all, the one which had been visible from both north and south. It was not more than fifty feet deep, but its sides were almost vertical and perfectly smooth. For a long time we worked at it, carefully going down each side of the mountain until at the bottom of the notch, but with no way to get onto the knife-edge again beyond the cleft. The whole situation looked hopeless and desperate. From our position here we could get a long, sweeping view of the whole north face of the mountain. It was practically vertical for a thousand feet down onto an extensive snow-field, and we turned away for all time from any hopes on that side.

We then surveyed the southern side of the knife-edge. It was steep enough, but nothing compared to the northern side. The only ray of hope lay in the possibility that if we could get down on the southern slope for several hundred feet, we could then work around toward the east, get more nearly under the main peak, and then by chance find a favorable chimney running up toward the summit. In an hour we had descended far down on this southern side. Here the slope was somewhat more gentle and we were able to work around on various shelves, finally coming to the largest of several chimneys running up in the general direction of the summit. This chimney was pretty well broken up, so that one could get finger and toe holds, but in many places it was worn smooth by the avalanches of rock, snow, and ice which for ages had shot through it. It lay at an angle of sixty degrees, but fortunately kept leading in the desired direction. The greatest care had to be exercised each instant to prevent the starting of rock-avalanches. Brown was a hundred feet ahead. I heard a warning shout, "Look out!" and knew something was coming. I ducked my head behind a boulder just in time to prevent its being hit by a rock the size of a football, which came tearing down. The rock struck my knapsack a glancing blow and bounded off.



KAWEAH PEAKS FROM NEAR BLACK ROCK PASS
The "wish-bone" of snow is at the left of the Black Kaweah
Photo by Charles A. Noble, Jr.



CLIMBING THE BLACK KAWEAH
At the top of the chimney
Photo by J. S. Hutchinson

After two hours' climbing we again reached the knife-edge and looked over into the deep abyss on the north side. Right above us, two hundred feet to the east, towered the summit. Our chimney now swung directly around to the southeast and narrowed up considerably. Soon we were in a tiny notch on a small buttress running out southwest from the main peak and not more than twenty-five feet from the summit. Here, unintentionally, we started a small avalanche. It shot down in a northwesterly direction, increasing in momentum and volume as it progressed, and in a few moments we heard it thundering down the chimney south and back of us—the chimney by which we had ascended—making a complete turn.

After eight hours of continuous climbing, at 1:45 we were at the summit (13,752 ft.), and spontaneously set up a mighty shout of joy. The peak stands in the midst of a tremendous amphitheater formed by the multitudinous peaks of the Great Western Divide and the peaks of the main crest. We looked into the whole region traversed by us during the three preceding weeks and saw the route we should follow returning to Giant Forest. Immediately below us to the south and west lay the deep depression of the Big Arroyo; on the northwest lay the Nine Lakes Basin; to the northeast lay the Kern-Kaweah Cañon; and to the east we looked along the ragged, jagged crest of the Kaweahs.

The only sign of life having been there before was an eagle's feather on the extreme summit. This we carried away as a trophy. After lunching and feasting on the superb view, we built a monument three feet high, thus making our mountain one foot higher than the next Kaweah Peak to the east. Then a flag-pole was constructed from the legs of our camera tripod, a white handkerchief was attached, and a flag was left floating from the summit. In the monument we deposited a tobacco-can containing the following memorandum:

> *August 11, 1920.—Left camp one mile below Nine Lake Basin at 5:40 a.m. Attempted to climb along N.W. ridge but impassable notches prevented. Then dropped down about 400 feet into the southern cirque and ascended the chimney which reaches the northwest ridge 100 feet N.W. of the summit. Arrived at summit at 1:45 p.m.*
>
> *Duncan McDuffie, Berkeley, Calif.*
> *Onis Imus Brown, Lemon Cove, Cal.*
> *J. S. Hutchinson, Berkeley, Calif.*

At three o'clock we started down, following the same chimney by which we had ascended. This work was most trying and tiresome, requiring greater care than the ascent. When we reached the point where we had first entered the chimney, the question arose should we again climb five or six hundred feet over the buttress to the west and descend to camp by our morning's route, or should we continue down into the cirque immediately below and south of us, past a snowbound lake, around the southern end of the buttress, and down into the Big Arroyo. We were tired of climbing, and so chose the latter course. Then came some rockwork as dangerous as any we had thus far encountered. Our chimney ended in high and abrupt benches and shelves, together making a drop of two or three hundred feet. It took us many long, anxious moments to work our way down to the cirque. At one place near the bottom the rope was used, but I am not at all certain it was essential; possibly there was a way around. The cirque was reached at the top of a snow-field lying there in the form of a huge wish-bone, pointing directly up toward our chimney. I mention this wish-bone, as it may in the future identify our line of ascent. Of course, a snow-field is apt to be a fleeting landmark. The Lake of the Lone Indian near the divide between Fish and Mono creeks was so named because of a perfect Indian head silhouette of snow in the bluffs above the lake; but a few years later, when I was there again, not the slightest trace of the Indian was left. However, with the wish-bone it may be different, for a photograph of the Kaweahs from Sawtooth, taken by Mr. Farquhar in 1912, shows exactly the same wish-bone to which we descended, and we all know that the snow-cross on Mount Tallac persists from year to year.

By the time we reached the cirque the sun had long since left it. It was very cold and the snow was frozen and rough. Then came jagged rocks and talus-slopes about the lake. Continuing in a southerly course, we finally struck some meadow-land and a fine grove of trees on the edge of the Big Arroyo. Here would be a good place to camp as a starting-point for the mountain, provided one could get up the steep benches and shelves above the wish-bone. In some places we had slid down where one could not possibly ascend, but probably these places could be avoided. From the grove of trees referred to we turned directly west around the end of the buttress, and after a long, tiresome descent, part of the way over sharp rocks, we reached camp just at dark, having been out fourteen hours.

Between our camp and Giant Forest lay three days of travel through as fine, beautiful, interesting, and exciting country as can be found in the Sierra, but I must hurry through. One day took us to a group of little lakes below Black Rock Pass. From here, with our glasses looking far across the Big Arroyo, we could see the white flag fluttering in the sunlight on the summit of our mountain. The next day took us across Black Rock Pass (elevation, 11,500 ft.). This is a strange and unusual pass, and should always be ascended from the east, for by so doing you will save one thousand feet in elevation. If you doubt this, look at the contour map. From this pass we went down, down, down Cliff Creek, more than six thousand feet in eight miles, through Redwood Meadow to the Kaweah River for the night, and then, the next day, across the deep gorge of Buck Cañon and up and up an old, unused, overgrown trail to Alta Meadow, where, at sunset, from that wondrously beautiful meadow, we gazed long and intently at the Black Kaweah towering six thousand feet apparently out of the deep abyss of Buck Cañon at our very feet. A few hours the next morning brought us to Giant Forest and the end of the trail.

And now five months have passed, and we still lift our eyes unto the mountains from whence cometh our help, and what do we see?—the wondrous afterglow lighting the high points of the trip—Silliman, Brewer, Triple Divide; the inspiring camps of Roaring River, Kern-Kaweah, and Big Arroyo; the unmapped lake; Colby Pass; and last, but not least, the once defiant Black Kaweah floating the white flag.

THE 1920 OUTING

HEADWATERS OF THE SAN JOAQUIN AND THE KINGS

By Marion Randall Parsons

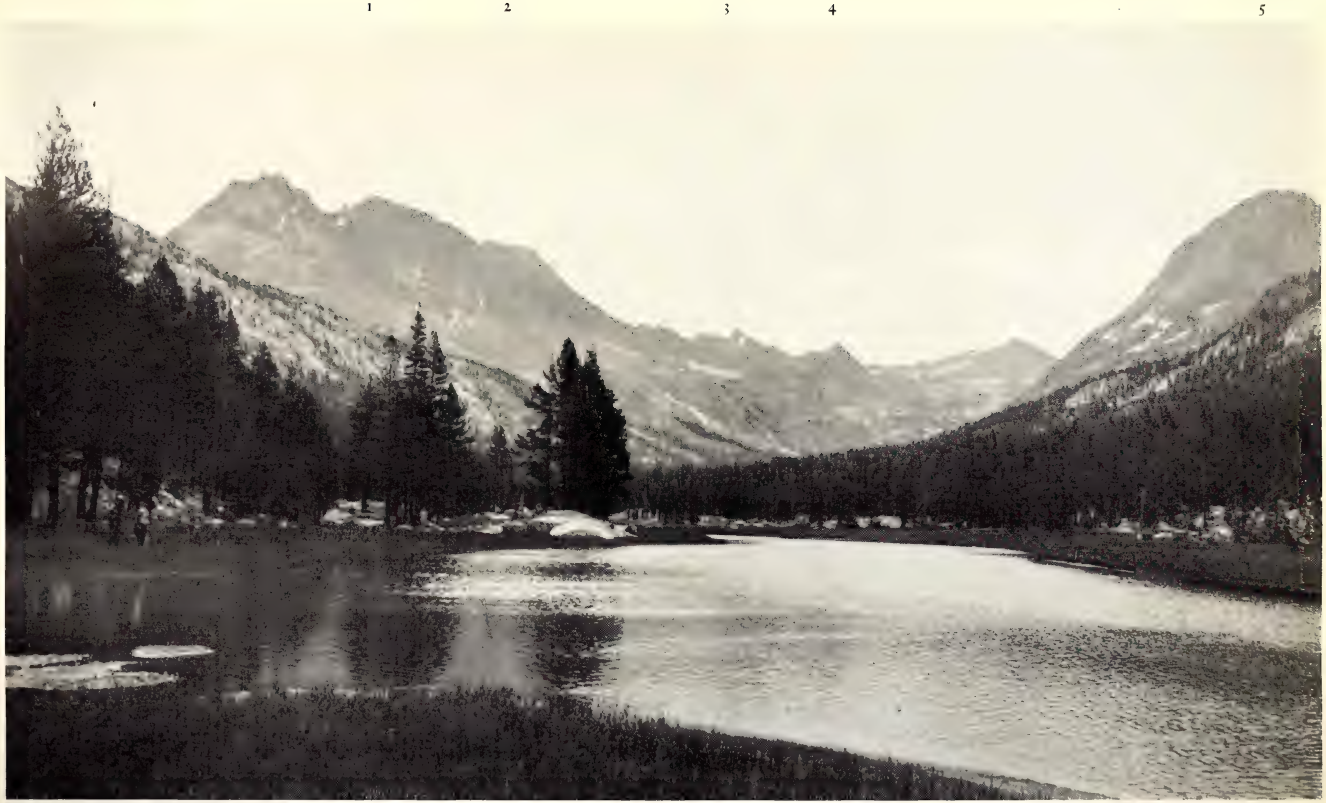
❦

IT was like old times in the Sierra Club—new trails to travel, new peaks to climb, camp-sites of unknown possibilities, daily mileage estimated on a Colby-plus basis, more than an element of uncertainty about the pack-train. Dear old dunnageless nights even were not unknown. But let us do no injustice to the pack-train. The mules left nothing to be desired. A little high-spirited and lively-heeled at packing-time, they were none the less well-intentioned, ambitious, hard-working mules. Render unto Cæsar those kicks, etc., as the Colonel would say.

The Colonel himself was not of those old times. Successor to Toy Gong and Charley Tuck, he marked a new era in our culinary history. The crowd appreciated his dinners, but at first did not quite understand the Colonel. We have the Colonel's word for it that the crowd "sure perplexed" him. It was too helpful, for one thing. He wasn't used to having people really mean it when they offered help, and it perplexed him, and perhaps he got irritable, so he said. We do seem to remember a wordy barrage or two, even a barbed-wire entanglement of cinch-ropes, from behind which the Colonel, defended from encroaching, helpful womankind, dispensed his wares of hot cakes and trout. But all such feelings passed, and in the end the Colonel left us our friend as we were his.

Huntington Lake, our first camp, was destined to become more familiar than we had anticipated. For the first time in outing history we were on the ground ahead of the pack-train. The barges that ferried us across the lake from the Lodge to our camp were upholstered with bales of hay, in hopeful token that mulish co-operation was at least expected; but the pack-train itself was somewhere along the trail between Dinkey and Shaver, five days behind its schedule. Several thousand pounds of provisions which should have been cached ahead of us in Evolution Basin were deposited in the snows of Granite Pass, quite outside the range of our itinerary, while the lesser amount destined for Mono Crossing was still at Huntington

VIEW FROM PERFECTION (JACKASS) MEADOW
South Fork of the San Joaquin River
Photo by C. S. Tappaan



THE EVOLUTION PEAKS FROM McCLURE MEADOW
1. Mount Wallace 2. Mount Darwin 3. Mount Haeckel 4. Mount Spencer 5. The Hermit
Photo by Francis P. Farquhar

Lake. Much recasting of plans this caused the Outing Committee. To its enduring credit be it said that in all the following enforced changes of plan never once did the party miss a meal.

The country about the lake proved charming, wooded with great Jeffrey pines and red firs, and groves of shining aspens. Dainty crimson mimulus spread a rosy carpet under the trees. Fishing was fair, swimming a rare luxury. There was a wonderful abundance of bird-life. Rugged Kaiser Ridge opened up surprisingly wide views of the Sierra from Mount Conness down to the Kings-Kern Divide. Nevertheless, we were happy to break camp the third morning and start on the trail across Kaiser Pass. That was a day of superb forests, a colorful day, rich in the warm reds of pine and fir boles, in meadow green and yellow mats of flowers. A dozen times distant Banner and Ritter shone in the vistas between the trees, rising above the blue cañon of the San Joaquin, or, on the nearer horizon, Red-and-White Peak, crowning Vermilion Valley.

The Hot Springs camp, where we were again delayed for two days, was the least attractive of the trip. Hot baths were too recent a memory to rouse much enthusiasm; so, to pass the time away, knapsacking began—up Bear Creek, or even as far as Seven Gables. At Jackass Meadow, however, the third camp, the charm of the High Country really began.

Our camp there was in the upper meadow at the head of the cascade. Hauntingly suggestive of the Tuolumne were the broad lupine-painted meadows, the glimpses of white peaks, the soda spring, the glaciated pavements. The low dome across the river offered beautiful sunset views of the green lower meadows long-shadowed with spiry pines, of sweeps of sunlit river, and of the burnished sides of Bear Dome and Jackass Dyke. Above camp the San Joaquin River ran slow and deep, its swirling eddies giving little hint of the strong, treacherous current that so nearly darkened our trip with tragedy. No account of the outing would be complete without tribute to the girl who unhesitatingly risked her own life in that river to save another's, or praise of the group of level-headed women who rescued them both in the end.

After two days of fishing in the river and swimming in Lake Florence we moved on again. So far we had not touched the route of the John Muir Trail, but at Blaney Meadow, where the trail comes down from Seldon Pass, we struck into this wonderful "highway" of the Sierra and followed it all the way to Simpson Meadow. Up to the junction of Piute Creek with the San Joaquin the river valley is broad, splendidly wooded, and in spite of its rugged walls at times almost pastoral in aspect. But at Piute Creek grim cliffs press down to the river's edge and the trail rounds picturesque rocky points almost bare of vegetation. Farther up the San Joaquin Cañon, near its junction with Evolution Creek, groves and meadows again appear, the latter now fringed with the pitiful remnant of flowers that has survived the sheep-grazing of recent summers.

Above 9000 feet the real High Sierra begins. The climb into Evolution Basin next morning took us into this magic country. The main cañon of the San Joaquin, bounded on the west by the beautifully colored peaks of the Le Conte Divide, now opened out at our feet. Evolution Creek, shattered into a white storm of cascades, tumbled down beside us. The upper meadows had the indescribable springlike freshness of High Sierra mornings—the sun striking fire from every dewy blade of grass and glinting gold on every ripple in the river. Fording Evolution Creek, either knee-deep in its icy cold or riding double on the woodcutter's horse, was the comedy event of that morning.

The basin of Evolution Creek is headed by the giants of the Evolution Group—Wallace, Darwin, Haeckel, Spencer, and Huxley. Close under these superb mountains, beside the gray Hermit,* we made camp for three nights. Had time permitted we would gladly have spent a week there in Colby Meadow, exploring the McGee Lake Basin and climbing in the Evolution Group. As it was, the only successful climbs from this base were made by the two parties who on the same day conquered Mount Haeckel; to Mr. Walter L. Huber belongs the honor of leading the first ascent. Darwin, attempted the same day by three different parties, while adding nothing to summit records, proved appropriately rich in incidents relative to the descent of man.

Twenty of us deserted Colby Meadow the first night for a knapsackers' camp at Evolution Lake. The climb up from the meadows through the golden sunset; the mysterious entrance into the obscurity of the lake basin at dusk; the firelight illumination of twisted albicaulis pines and a rocky shore; the blackness of encompassing mountains, shutting out the stars; then the revelation of our new surroundings by the dawn—ours was a wonderful introduction to a region that, under some conditions, is almost forbidding in its grim austerity. The strong gale of that first night there persisted all next day, adding much to the difficulties of the various climbs. The second morning we were aroused by a patter of hail. Glorious clouds masked the mountains, or, breaking, colored the lake with flame. From the outlet the long cañon vista below was hidden in shifting veils of fog. Climbing was out of the question, so we returned to Colby Meadow, finding the pack-train ready to start across Muir Pass to cache provisions on the Kings River side of the divide.

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* The Hermit was the name originally applied to the peak of 12,352-foot altitude that rose just across the creek from our camp. The map is in error here, and subsequent editions should have this corrected, as the name is far more appropriate to the peak first designated.

With a storm in progress, the result of this attempt to cross a little-known pass of 12,059 feet, said to be still deep in snow, was anxiously awaited by us all. Nor was apprehension entirely allayed by the successful return of the train that evening, for the uncertain weather still persisted. Daybreak brought a sharp rain that might mean a blizzard on the pass. But we could not delay the start. Our commissary was as bare as Mother Hubbard's, and, once breakfast was finished, the lunches in our bandanas were the only provisions left on our side of the pass.

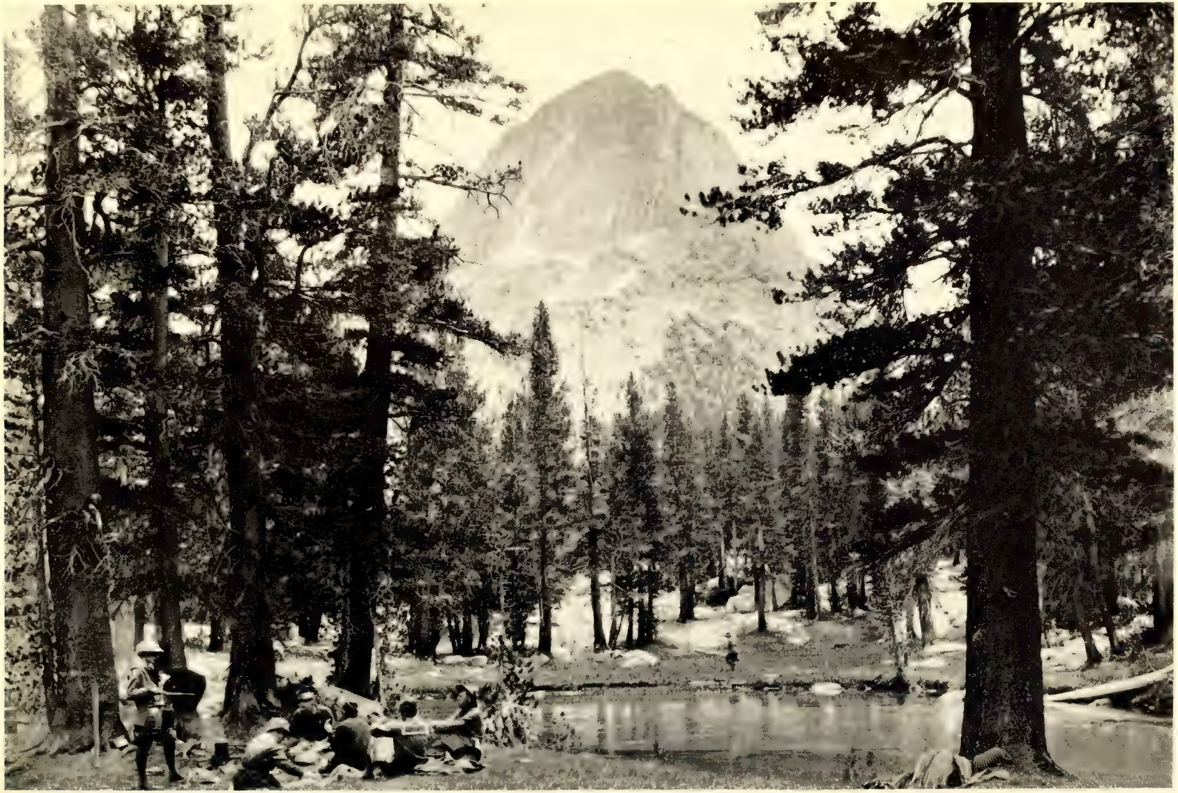
So, from the friendly meadow with its golden stream and sheltering groves of tamarack pines we journeyed up into the austere grandeur about Evolution Lake; past Sapphire Lake and the stately pyramid of Spencer; across the rock-strewn, snowy river valley at the base of Mount Huxley, where Hop-o'-my-Thumb willows, barely an inch high, were the sturdiest growing things; past Wanda Lake, half-filled with ice, lying close under the black Goddard Divide, and up the last barren rise to the pass. Clouds filled the sky but did not obscure the mountains. On the contrary, under their luminous glory the peaks loomed darker, higher, more majestic than when seen in sunshine. The usual vivid color of High Sierra altitudes was replaced by almost startling effects of black and white.

Lowering as the weather had looked at dawn, the day proved to be ideal for our crossing. A five-minute flurry of snow and hail on the pass was all the storm quota of the day. The snow was hard, giving excellent footing, and where a small pack-train a few days before had wallowed helplessly up to the saddle-girths our animals passed safely with scarcely a flounder. We felt that we made history that day when 260 human beings, 100 animals, and 18,000 pounds of supplies crossed Muir Pass without one mishap.

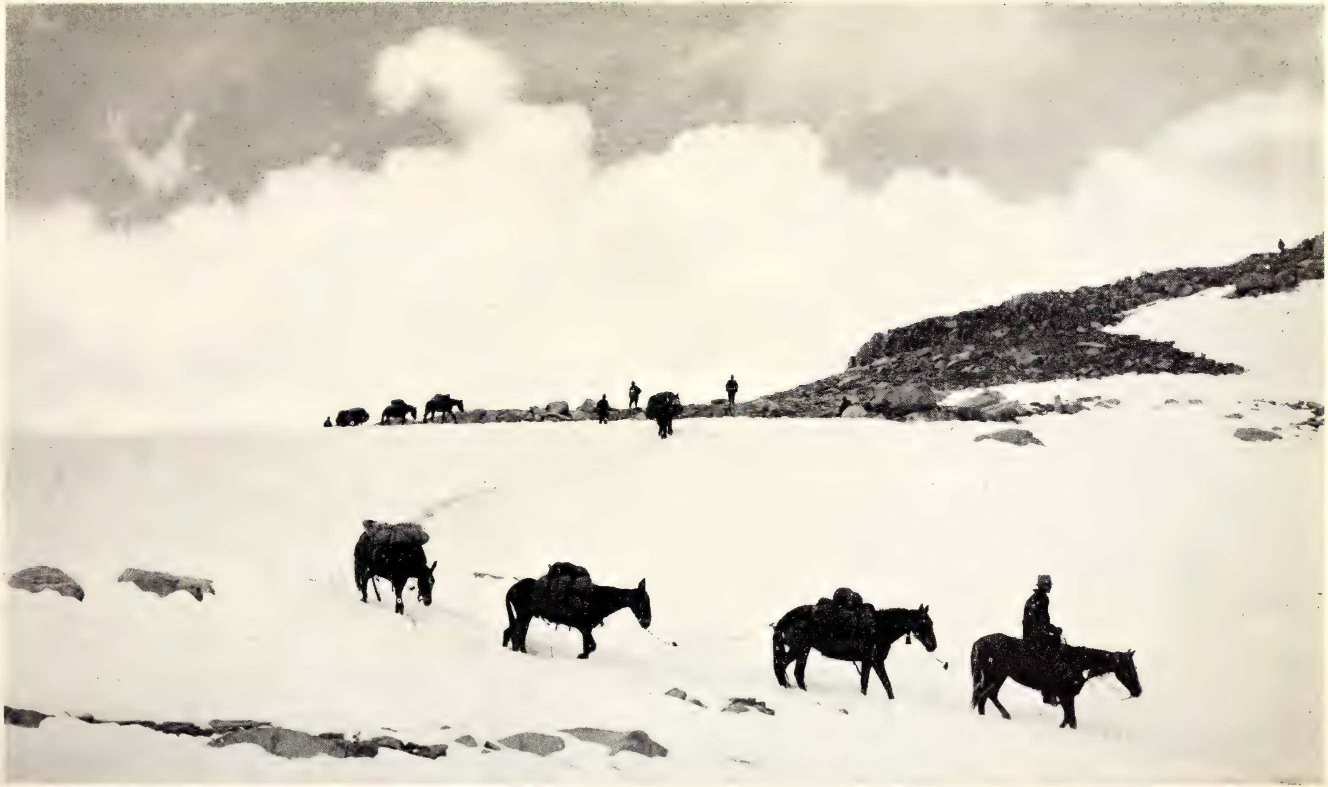
The deepest snow lay on the Kings River side, and the whole party waited to see the first string of mules safely across the pass. From the summit down for more than a mile below Lake Helen the trail was for the most part hidden. The approach on this side was steeper, more abrupt; the mountains pressed more closely and grimly about the cañon's head. But once below the first struggling outposts of albicaulis pines conditions more favorable to plant and animal life quickly reappeared. The dark Palisades on the horizon line, the looming cliffs of Mount Goode and the Black Divide, were softened by the flowers and meadows and beautifully colored tarns of the cañon bottom. In spite of its ruggedness there was a warmth, a brightness about this cañon in striking contrast to the desolate grandeur of Evolution Lake. Still farther down, looking past the sheer white cliff of Mount Langille and the broad swale of Little Pete Meadow, the long cañon vista, ending in a line of shining peaks, brought to mind the Sierra paintings of William Keith.

Among all the days that we have experienced in our Sierra summers none is more wonderful than this one, when we crossed Muir Pass. The region is the climax of Sierra grandeur—a region of cañons rich in vegetation and in wonderfully sculptured walls, of peaks more ruggedly and superbly fashioned even than their gigantic neighbors of the Kern.

The Sierra Club day that is richest in beauty sometimes proves rich in humor too. Camp in Little Pete Meadow that night is indelibly engraved upon some two hundred and sixty memories by the drolleries of its epoch-making feast. Dunnage arrived promptly, but dinner, had it not been for the thousand pounds of provisions and the large dishpans carried down by hand from the cache, might have been both scant and late. But soup, hot corn, and cold corned beef were tonight supplemented by plum pudding, served hot in the can. Serving that pudding indeed, without knives, large spoons, forks, or plates, might have proved a problem had not the fertile brain that guides commissary destinies devised the scheme of counting out the line into groups of ten, giving the head man the can and the rear guard the key and letting them solve the problem for themselves. In spite of the darkness there was no difficulty about keeping these groups of ten together. They hummed away toward the firelight like



THE HERMIT FROM SIERRA CLUB CAMP AT COLBY MEADOWS
Evolution Creek, 1920
Photo by Walter L. Huber



SIERRA CLUB PACK-TRAIN ON MUIR PASS, JULY, 1920
Photo by Rodney L. Glisan

swarms of bees after their queens. Just prior to the announcement of this plan the dunnage-bag-packers, suddenly realizing that all the necessary implements were still out on the trail, became aroused to a really frenzied sense of social responsibility that loudly denounced the tardy commissary-packers.

The rugged splendor of the Middle Fork Cañon continues down to Grouse Meadow. There the towering walls stand apart and the river winds in slow curves through an enchantingly lovely meadow. Its perfect beauty is slightly marred now by a sandy strip of desolation near the lower end, where an avalanche has plowed across, uprooting the grove of pines where Mr. Le Conte's party camped in 1908 on their memorable exploring trip over the present route of the John Muir Trail.

Just below Grouse Meadow, at the junction of Palisade Creek, we made camp for four days. Again time was all too short. There was Rambaud Creek with its lovely lake basin to explore, or Dusy Creek, leading to Bishop Pass. Palisade Creek one night had so many visitors that the main camp was nearly depopulated. Besides the "demoratic knapsack party," with its accompaniment of forty mules, many labor parties, with backs bent under their burdens, started out on adventures of their own. Palisade Basin, overlooked by the North Palisade, attracted some. Cataract Creek, up which lay Observation Peak and colorful Amphitheater Lake, called to others. Still others continued on southward past the Dumbell Lakes to Marion Lake, joining us again at Simpson Meadow. For three nights the knapsackers' fires shone—such happy, secluded, cozy fires! The most intimate charm of the outings, their friendliness, their laughter—remember only the firelight shining on the great trees that stretched sheltering arms above your knapsackers' camp, and how it all comes flashing back again!

During our days of wandering the pack-train had been busy withdrawing the "cache from the snowbank" high up on Granite Pass, for all our provisions had now to be carried with us day by day. Henceforward there could be no loitering if we were to return to the railroad on time. We should not leave this camp without comment on the unprecedented appetites there developed. "I cayn't fill 'em up; I just cayn't fill 'em up!" moaned the Colonel when the annihilation of the thirteen hundredth biscuit and the twenty-fifth gallon of soup found the line still going strong and unsatisfied.

The Middle Fork Cañon from Palisade Creek down to Cartridge Creek was only five years ago one of the most inaccessible spots in all the Sierra. Barriers of glaciated granite stretching from cliff to river made it not only impassable for animals, but also a test of mountaineering skill for men. In color and sculpture it is a magnificent cañon, suggestive of the Tuolumne, but without its waterfalls. Except for the short distance down this cañon, our trip for the next four days was among scenes made familiar on the 1913 outing of rainy memory—the glorious flower-garden of Simpson Meadows; the pine forest just below; the dome of Tehipite, free this time from obscuring clouds and rising white and incredibly high in the moonlight. Several members of the outing party successfully climbed the dome, the first time outing itineraries and weather have permitted the attempt.

Other pictures of this homeward journey rise to mind—the blazing-star (*Mentzelia laevicaulis*) that bloomed at dusk beside our Tehipite camp-fire; the morning view of the Middle Fork Cañon from the brink of Tehipite Valley; the forest of red fir and the field of flowers at Gnat Meadows, libelously so named. There the vaudeville was staged with its last program from our popular violinists, and, with its fashion show, rivaling in originality even the democratic convention fittingly held in Jackass Meadows.

One more day deserves special mention. There has been no other just like it in our annals—lost sheep day, when from Crown Meadow to North Fork we strayed about seeking trails, finding trails, losing them, blazing them, dispensing with them, scorning them, until dinner-time found us at North Fork a shattered party minus half the dunnage, all the stoves, all the horseback riders, all the cooks, part of the commissary, and forty per cent of the personnel. The undaunted Outing Committee produced dinner promptly on time. Not the most vigilant assistant cook can name all the ingredients of that wonderful soup; but a horrid doubt persists whether the three bottles of Worcestershire sauce were meant to enhance or to conceal the ultimate flavor. There was dinner enough to satisfy those present and a liberal reserve in stock for stragglers. And they straggled! A string of mules drifted in; a group of people; another string; a cook; the cavalcade; another cook; still more people. At last, amid cheers, the Colonel rode into the firelight on his white charger. With uplifted arm he delivered himself of an oration in praise of the Judge, that most democratical man who, like Moses, had led them out of the wilderness when they were lost on the mountain, a ship without a rudder! That speech proclaimed the Colonel a real Sierran.

Near midnight, when the last survivor was counted, there were found still missing seventy-two dunnage-bags, twenty-four mules, five packers, and two members of the party, presumably sharing vigil with the packers. By drafting into active service all extra blankets, tents, and sweaters, the destitute were covered at least, if not conventionally equipped, for the night, and all went to bed in a fair amount of comfort around two great camp-fires.

With only two days left, we were still nearly forty miles from the railroad. There was nothing for it but to push on. No real apprehension for the missing men was felt until the following evening, when, with the arrival of the packers, only one of the men proved to be with them. We were only a short distance from ranger telephones, however. The District Forester, Mr. Paul Redington, and Ranger Price were with our party, and by their kind help within a few hours we were assured that the lost man was safe and on his way to Cascada, where he joined the party again.

And so, in spite of all threatened mishaps, of chicken dinners lost and Fresno feasts deferred, of mislaid cooks and flutes, and tardy dunnage-bags, the trip came to a gloriously successful close. Considered for its scenery alone, this outing of 1920 stands supreme, but in other ways, too, it was a notable one. Never before has so large a party been taken over so difficult a mountain route, and one moreover unfamiliar alike to the Outing Committee and to the packers. Never before, either, has our progress been so dependent on the active co-operation of the crowd itself. To name those to whom the outing is indebted for willing, constant service, would be to name the whole party. But thanks are due particularly to those members without whose help the pack-train, the most important factor in our success, would have utterly failed. While perhaps a melancholy reflection on the times we live in, when men will not, for money received, adequately perform work which they have agreed to do, yet the experience showed a gratifying balance on the other side of the scale—a record of the most generous sacrifice of personal convenience and pleasure for the sake of the common good.

FIRST ASCENT OF MOUNT HAECKEL

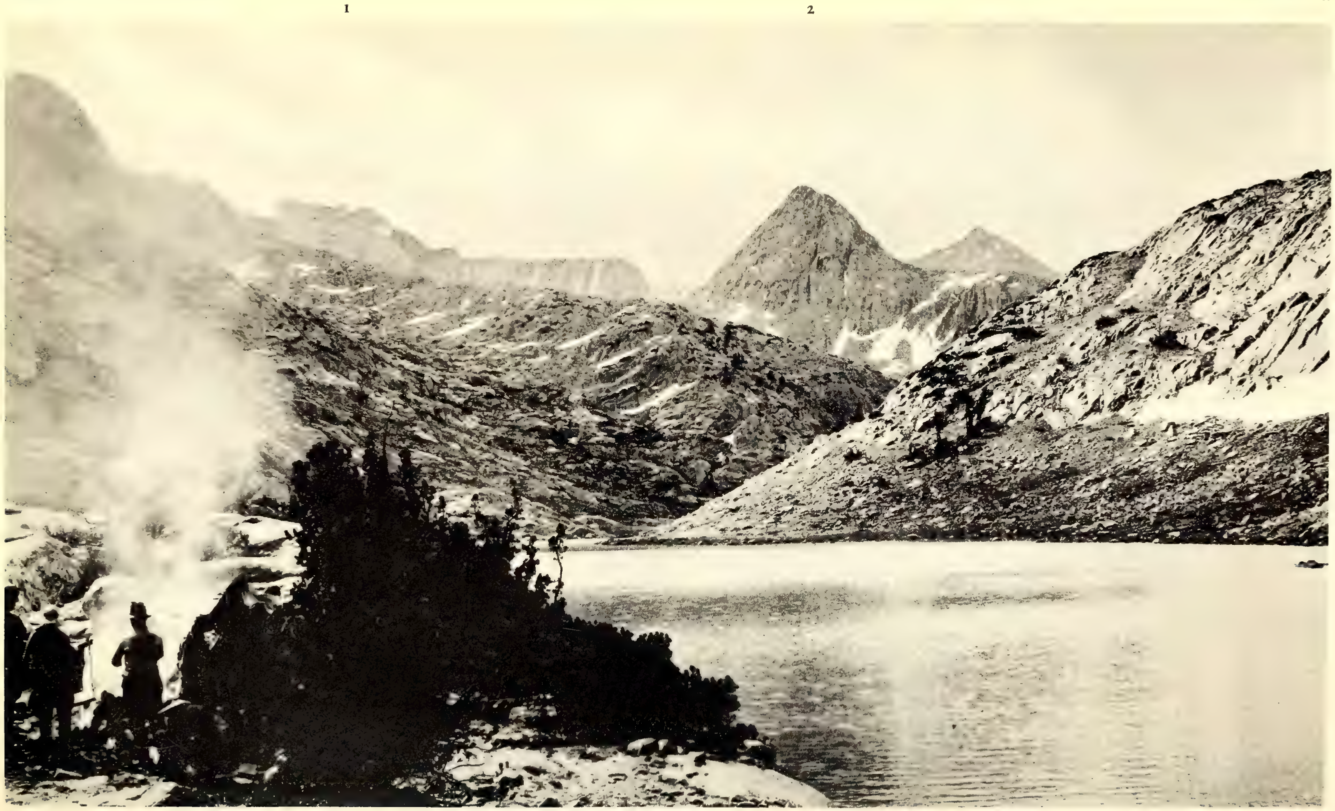
By Walter L. Huber

❧

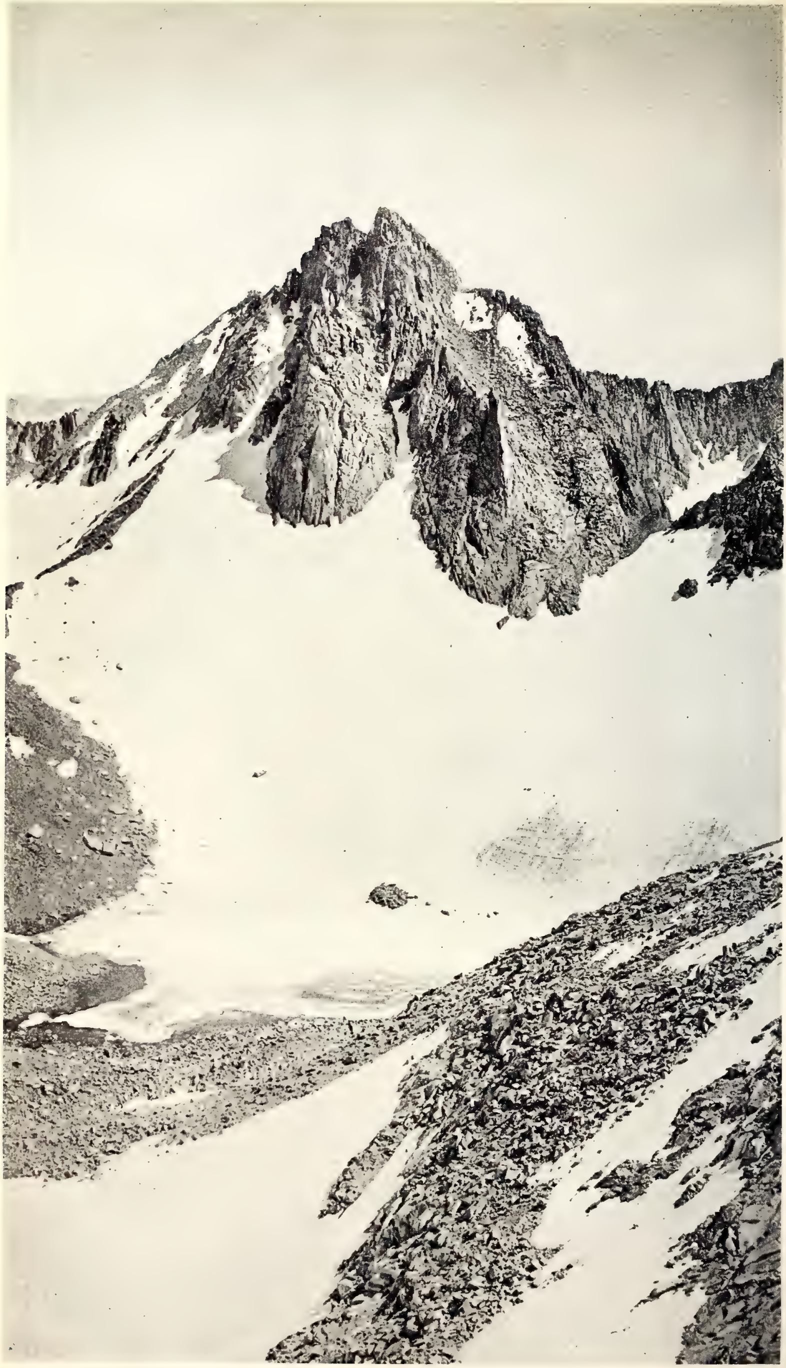
FOR several years my work has occasioned many visits to Lake Sabrina, a reservoir at the head of the Middle Fork of Bishop Creek. From the first these visits have served to arouse my interest in the wonderful peaks beyond the lake and at the head of this fork of Bishop Creek. From here some of the giants of the Evolution Group—Darwin, Haeckel, and Fiske—present an imposing view. Indeed, their greatest precipices and snow-fields are on this (the Inyo) side. Each visit to Lake Sabrina (named for Mrs. Charles M. Hobbs, wife of the first general manager of The Nevada California Power Company) strengthened my desire to climb Mount Haeckel, which, from this direction, is a very ragged and forbidding pyramid above a rather extensive glacier.

Finally, when plans were completed for the long-delayed outing of the Sierra Club to the South Fork of San Joaquin River, to the Middle Fork of Kings River, and the crossing of Muir Pass, I joined the party with a hope that somewhere on the trip, which would pass close to the western base of the mountain, I would find an opportunity to try to climb this western side, which I had never seen, but which I believed would afford an easier ascent than did the eastern (or Inyo) face. Naturally I viewed the delays due to packing difficulties early in the outing with some impatience, as I appreciated that the time previously allotted to the exploration of Evolution Basin was being thereby reduced. To seek out a feasible route up an unclimbed peak often requires more than one attempt and more than one day's exploration.

The outing party broke camp on the South Fork of the San Joaquin River early on the morning of July 13th and made a short march of a few miles to Colby Meadow on Evolution Creek. Twenty-six of the party did not select camp-sites here, but waited for the arrival of the pack-trains, and during the afternoon carefully weighed out provisions for a knapsack trip which was to take us on ahead of the main party for a couple of days. We were served first at supper, and, after a rather hasty meal, lost no time in shouldering our



EVOLUTION LAKE
1. Mount Haeckel 2. Mount Spencer
Photo by Walter L. Huber



MOUNT HAECKEL (13,422 FEET)
Photo by Frederick H. Morley

packs and starting up the trail to Evolution Lake, where we planned to camp for the night. This first march was to be a short one, only a few miles, but it included a climb from an elevation of about 9900 feet to about 11,000 feet. At this elevation and after a hearty meal a heavy knapsack load is a little burdensome; but there were compensations—none of us will forget the wonderful sunset and the view down the cañon of Evolution Creek, with such an indescribable riot of sunset coloring. Darkness gradually overtook us, but no difficulty was experienced in following the trail. Not so in selecting camp-sites after we arrived at Evolution Lake. This lake, as we discovered next morning, is so high that its shores are without timber other than a few scattering clumps of *Pinus albicaulis,* which afforded scant shelter against the winds which we experienced. After much searching with flashes, everyone was finally located—whether comfortably was a subject of later discussion.

Next morning camp was astir early, and the nine of us who were to try the climb of Mount Haeckel, with loyal and generous help from others of the party, were able to start at 6:30. The tramp around the shore of Evolution Lake in the frosty air with frozen grass crunching under every step was invigorating—no member of the party had any tendency to lag. A careful survey from camp with binoculars had convinced us that to attempt to reach Mount Haeckel from the amphitheater north of Mount Spencer would get us into difficulties when we reached the crest of the Sierra just north of our peak. Although we were unable to see into the basin between Mount Spencer and Mount Huxley, the topographic map indicated that this route would probably be preferable. Accordingly, we pushed round the shoulder of Spencer and to the top of a bench of morainal matter at the lower end of the basin between Spencer and Huxley.

At about this point we discovered fresh footprints crossing a snow-field and indicating that another party was ahead of us and that it was probably aiming for the same goal. From this vantage-point we studied possible routes of ascent. To reach the crest of the range directly before us seemed quite easy, but to cross the many sawteeth encountered before reaching the summit would certainly require much slow and tedious climbing. Another possibility was to cross a snow-field to the left and pass through a chimney to the top of a ridge which led up at a steep angle from the west to a junction with the main crest just south of the summit. This last route was selected. Soon the other party was sighted making the ascent by the longer route.

As our route was uncertain, three of us climbed ahead across the snow-field, through the chimney, safely made the climb up its east face, and began the ascent of the steep ridge leading to the crest. In order to be certain that the remainder of the party found the safest way to climb out of the chimney below us, I retraced my steps to its east wall. Before doing so I asked Bowers and Emerson to seek a possible route to the summit and reach it as soon as possible. Finally, when all of the party had safely climbed from the chimney to the rocky ridge, I turned my attention to the summit. A strenuous climb brought me to the junction of the western ridge and the main crest. The summit of the peak is a short distance to the north and somewhat higher. In traversing this stretch one encounters a face, perhaps thirty or forty feet in height, which is vertical, but where good handholds are available. I reached the base of this face very much out of breath, but with the assurance of my two comrades, who had preceded me and who were now smiling down from the top. A few moments later I half-climbed and half-rolled over the top to find both my companions urging me on for the last few feet to the top block of rock, which they had refused to touch before my arrival.

At 10:30 A.M., July 14, 1920, I had the satisfaction of sitting on the topmost block of Mount Haeckel (elevation 13,422 feet) and of looking directly down the Middle Fork of Bishop Creek from its head. It is needless to relate the satisfaction experienced after ten years of desire to accomplish this feat. We found no evidence of any previous ascent of the peak. It is also a pleasure to record that the entire party of nine, consisting of Nathan A. Bowers, G. D. Emerson, Francis P. Farquhar, Rodney L. Glisan, Mrs. Walter L. Huber, Walter B. Marble, Lulie Nettleton, Robert M. Price, and the writer, reached the summit. Three fellow Sierrans, Allen, Crofts, and Haskell, constituting the party which had ascended by the south ridge, arrived at the summit but a few minutes later than the leaders of our party, but under the impression that they were climbing Mount Darwin.

The view from the summit was an interesting one, particularly of the near-by peaks of the Evolution Group and of the Palisade Group. Because of a terrific wind, we tarried to enjoy neither lunch nor view very long, but began the descent.

FIELD NOTES OF THE 1920 OUTING

ELIZABETH VAN E. FERGUSON

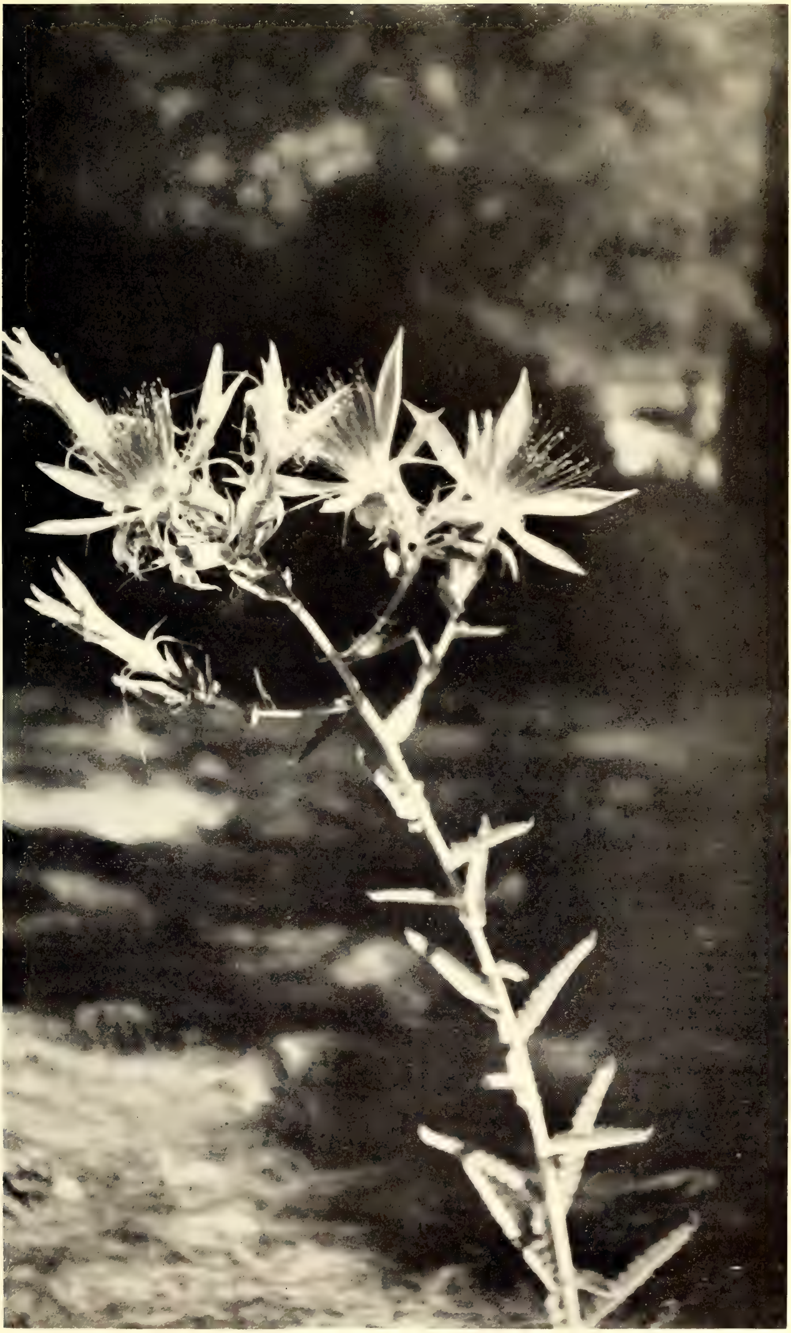
KAISER RIDGE, *July 6.*—Perhaps no plant of our Sierra forests attracts more attention than our brilliant blood-red Snow-Plant (*Sarcodes sanguinea*). It is a very Mephistopheles among plants. Finding it, however, on a warm summer's day miles from any snow, one is inclined to question its popular name. Indeed, it is no more truly a snow-plant than many another Sierra plant. It does not grow nearly so high nor so close to the banks of perpetual snow as do the sky-blue Polemoniums or the Sierra Primroses. It is a plant of middle altitudes, associated in our minds with magnificent red-fir forests. How often have we not come upon a clump of these scarlet miracles lighting up the leafy mold at the roots of some giant fir tree! Perhaps a snowbank may form a background—but it is a fast-melting snowbank, the last remnant of the winter fall. It is doubtful if a Snow-Plant ever pushed its way up through winter snow, although it is possible that a late spring snow might cover the ground with a light mantle after the plants had started. Such a belated snowfall piling about the brilliant red stalks would certainly give the effect of their actually growing and blooming in the snow.

Although called a parasite, the Snow-Plant is not such, as it does not draw its sustenance from the living tissues of another plant. It is a saprophyte—that is, it lives on dead, decaying vegetable matter. Its blood-red stems arise from an underground, very much involved mass of coralline roots which gather up food materials from the leafy mold of the forest floor. Often there are as many as a dozen stalks from a single network of these roots.

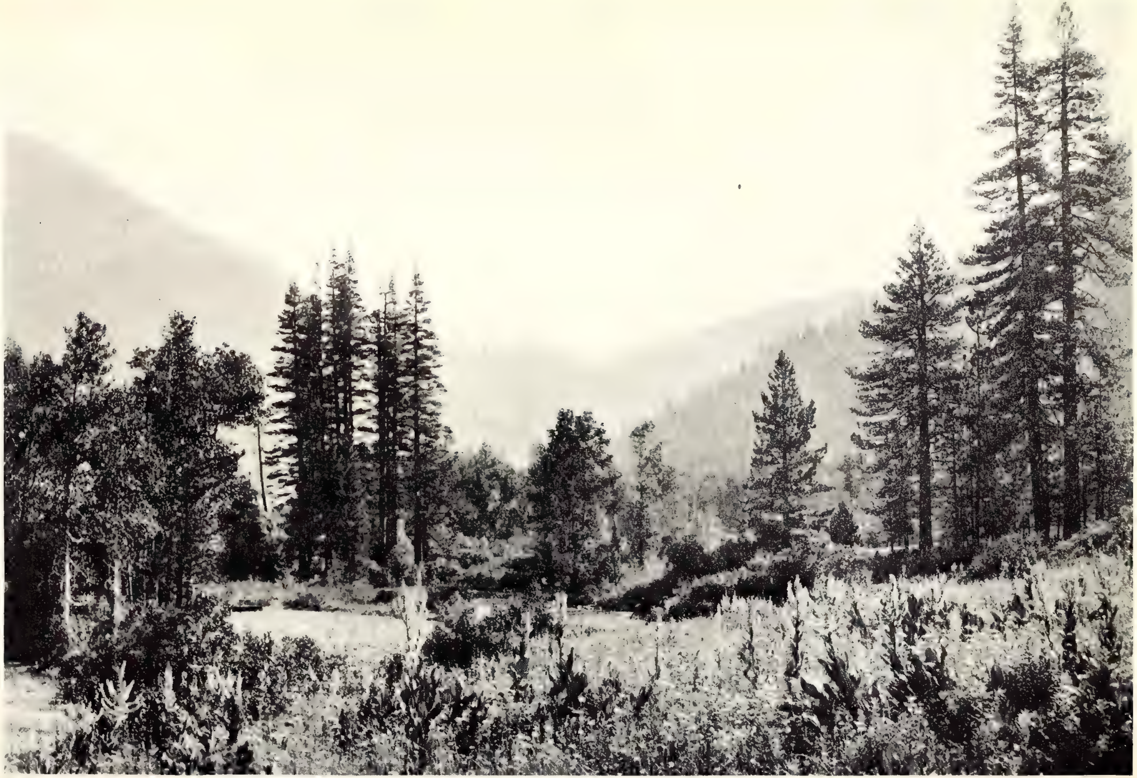
Mono Meadows, July 8.—One of the rare treats of a trip into the mountains is to come suddenly upon a light-blue patch of the delicate jewel flowers of *Downingia montana.* This is a little member of the Lobelia family which may be found on the margins of vernal pools. As in Mono Meadows, the water often entirely disappears from these pools, leaving in its place a close carpet of these tiny flowers. Although beautiful in mass, the flowers are even more lovely when examined closely. Perched at the top of a long, slender green ovary and calyx-tube is the dainty little orchid-like flower. The upper lip, very small, is composed of two minute lavender lobes; the lower lip is broad and spreading, white at the throat, with a bright blue border and three rounded spreading lobes.

Jackass Meadows, July 10.—Not far from the rushing waters of the South Fork of the San Joaquin we found a beautiful clump of Scarlet Gilia (*Gilia aggregata*). The long scarlet trumpet-shaped flowers are borne on loose panicles, often a foot long, and when occurring in mass are very striking. If anyone watched these plants carefully he must surely have noticed the humming-birds which were constantly darting about and stealing sweets from the brilliant tubes. Such tubular flowers often have small nectar-secreting glands at the base of their tubes which the humming-birds with their long beaks are easily able to reach. Often the humming-birds help pay for their stolen sweets by transferring pollen from one plant to another. Indeed, it might be easily demonstrated that nature had provided for this method of cross-pollination. In these Scarlet Gilias, as in certain Pentstemons, the stamens, with their anther-sacs full of pollen, are just the right length to dust the little frontal feathers of the humming-bird. The bird then flies to another flower and, first hitting the fertile stigma, brushes off some of the pollen upon it. Often the humming-birds become so covered with pollen that they appear to have yellow foreheads. Indeed, in the early days a new species was described as having a yellow patch which distinguished it from our common Anna hummer. Later it was discovered that this yellow would brush off—it was nothing but pollen. That in turn nature has given the humming-birds a strong sense of color is shown by their love for red. A red tomato-can or a red bandana will often cause a hummer to stop in his rapid flight and dart toward the brilliant object. Many people believe that there is a correlation between the presence of humming-birds in this country and our abundance of bright red flowers.

Evolution Basin, July 14.—As we approach the higher altitudes the attention centers on those brave plants which occupy the frontiers of the earth's vegetation and typify the Alpine Zone. Due to the high actinic quality of the light, most of these plants possess flowers of intensely pure colors. Indeed, the alpine flowers appear very delicate and are in strange contrast to their rugged and barren surroundings. It will be found, however, on closer examination that



THE BLAZING-STAR
(*Mentzelia laevicaulis*)
Photo by Ynez de Reygadas



SIMPSON MEADOW, MIDDLE FORK OF KINGS RIVER
Note flower-garden in foreground
Photo by Walter L. Huber

the permanent portion of the plant body is extremely condensed at or below the surface of the ground. The stems branch and rebranch, forming with the leaves a closely interlaced cushion-like vegetative body which rests on the ground or hugs close some rocky crevice. This form of plant body is well fitted for the long winter or for the great variations in temperature from freezing to summer mildness which occur almost daily during July and August in our alpine Sierra Nevada.

The Alpine Eriogonum (*E. incanum*) illustrates this high montane vegetative habit. Its yellowish or reddish flowers arise from a dense mat of gray foliage which flattens out on patches of decomposed granite. The little golden Draba (*D. lemmonii*) is another vivid alpine plant abundant in the Evolution country, its leaves forming close rosettes at the base and its bright yellow flowers with the petals in fours, showing its relationship to other members of the Mustard family. One of the most handsome of these plants is the Alpine Phlox (*P. douglasii*), its cushion covered with dainty white or pinkish flowers. True snow-plants are the little Snow Fairies (*Lewisia pygmaea,* the Bitter-root of the Indians)—tiny plants with white star-flowers, to be found growing in the moist seepage slopes of melting snowbanks.

Another type of alpine plants is frequently much dwarfed, but does not develop laterally into a distinct smooth cushion. One of the finest of these high mountain species is the yellow Columbine (*Aquilegia pubescens*), a dainty graceful plant, in marked contrast to the awful grandeur of its rocky surroundings. The flowers are large and handsome, with very long spurs, resembling the columbines of our gardens. The color may range from cream, pale yellow, or coral to pink or lavender. It is a very aristocrat among columbines, different from the modest red-flowered sort which grows in lower altitudes and is the common columbine of our coast ranges.

Equally beautiful plants of the high rocky ledges are the sky-blue Polemoniums, sometimes called Sky Pilots, their petioles crowded with tiny leaf-segments and the stems ending in dense clusters of lovely blue flowers. One of the most delightful sights imaginable is to find a clump of Sierra Primrose (*Primula suffrutescens*) nestled under the sheltering ledge of a great granite boulder. The shiny toothed leaves from which arise the clusters of small red flowers make this plant particularly attractive.

Long before we reached Muir Pass even these alpine plants had disappeared. Snow, rocks, ice piled one upon the other. Only occasionally the little Arctic Willow (*Salix artica* var. *petraea*) raised its fuzzy gray catkins above the ground. These miniature trees testify surely to the arctic character of this desolate country. The stems are very short and the slender tortuous branches much depressed, forming a prostrate mass only one to four inches above the frozen ground. Amid the rocks and ice of a mountain-top willow trees an inch high prove conclusively the triumph of life.

Tehipite Valley, July 24.—Along the trail down the Middle Fork Cañon we passed a Piñon Pine (*Pinus monophylla*), evidently a stray from the dry eastern slope of the Sierras. Possibly this tree marks an old Indian trade route. The Indians' fondness for piñon-nuts is well known, and it is believed by many that these isolated specimens of Piñon have sprung from nuts left by the Indians in their journeyings.

Our camping-ground lay amidst the boulders of a sandy wash. Here and there a tall Yucca (*Y. mohavensis*) raised its towering stems skyward.

As evening fell we gathered about the camp-fire. How different was this balmy air from that of a few nights before! How different was the vegetation of this warm semiarid valley to that of the wet snow-swamps of higher altitudes! The great Maul Oaks (*Quercus chrysolepis*) spreading their huge branches some fifty feet above us made the memory of the little alpine dwarfs very unreal.

As we sat in the flickering firelight, a slight motion called my attention to a prickly grayish-green plant by my side. It stood about three feet high and the leaves were covered with fine barbed hairs which caused them to stick to anything that touched them. But what made the plant conspicuous were the large yellow buds which crowned the long wandlike stem. These yellow buds seemed alive. First the long golden petals opened slowly, and gradually the mass of golden stamens spread out to form a filmy halo of spun gold. When fully open, the flowers of the Blazing-Star (*Mentzelia laevicaulis*) spread for three or four inches. A magnificent sight they made there in the firelight—another star blooming on earth as a reflection of the stars above.

THE LONG-LOST CARPENTERIA

By Willis Linn Jepson

❦

IN the year 1852, John Torrey, professor of botany in Columbia College, published in the Plantae Fremontianae* a new species of shrub from California which he named *Carpenteria californica*, the genus name being in honor of his friend Dr. Carpenter, of Louisiana. This shrub had been collected by Fremont on one of his California expeditions. No definite locality was given for it, except that it came from the "Sierra Nevada of California, probably on the headwaters of the San Joachin."

In that early day the Sierra Nevada was only slightly known, and the indication of Fremont's station for the shrub was regarded at that time as extremely vague, since it may have been taken to mean any part of the vast territory drained by the San Joaquin River. The specimens had been collected in fruiting condition, and it was only from some vestiges of withered flowers that Dr. Torrey was enabled to make out the character of the petals and stamens. He demonstrated that it belonged to the Saxifrage family, the *Philadelphus,* or mock-orange, being one of its relations.

For a long period, indeed nearly thirty years, nothing more was known of this peculiar shrub. In the later seventies, nurserymen at Fresno discovered in the Sierra foothills northeast of Fresno, near the Grapevine Spring, above the toll-house on the road to Pine Ridge, at about 3000 feet, a strange bush which turned out to be *Carpenteria californica.* They collected abundant seed, distributed it widely to horticulturists, and it came into cultivation in various parts of the world.

For a long time a bush has been flowering regularly in its season in the Botanic Garden of the University of California. It has pure white flowers, two to two and one-half inches in diameter, with a large yellow center of golden stamens. The buds of these flowers terminate the branches, and on opening, instead of remaining horizontal, turn to a vertical position and look frankly at you in a most engaging way. The bush when in bloom is a very lovely one for garden

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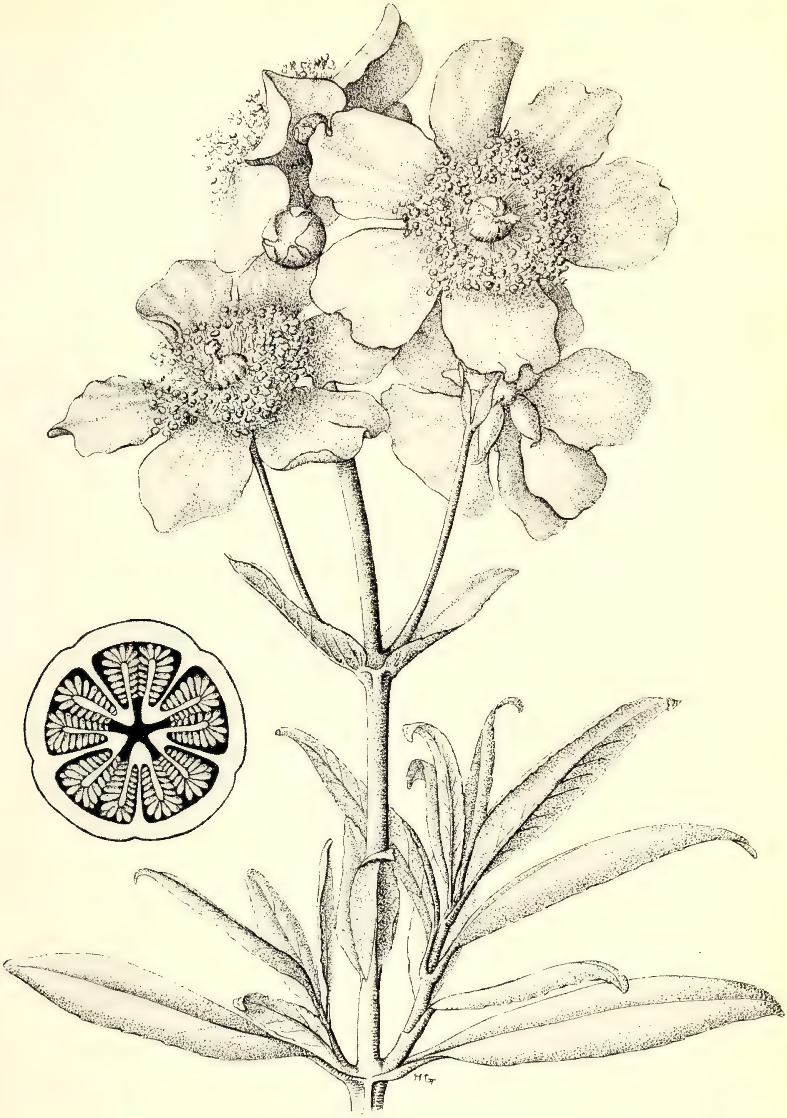
***Smithsonian Contributions to Knowledge,* vol. vi, art. 1, p. 12, t. 7.

decoration, but it would seem that the flowers are often more beautiful in the native habitat of the species.

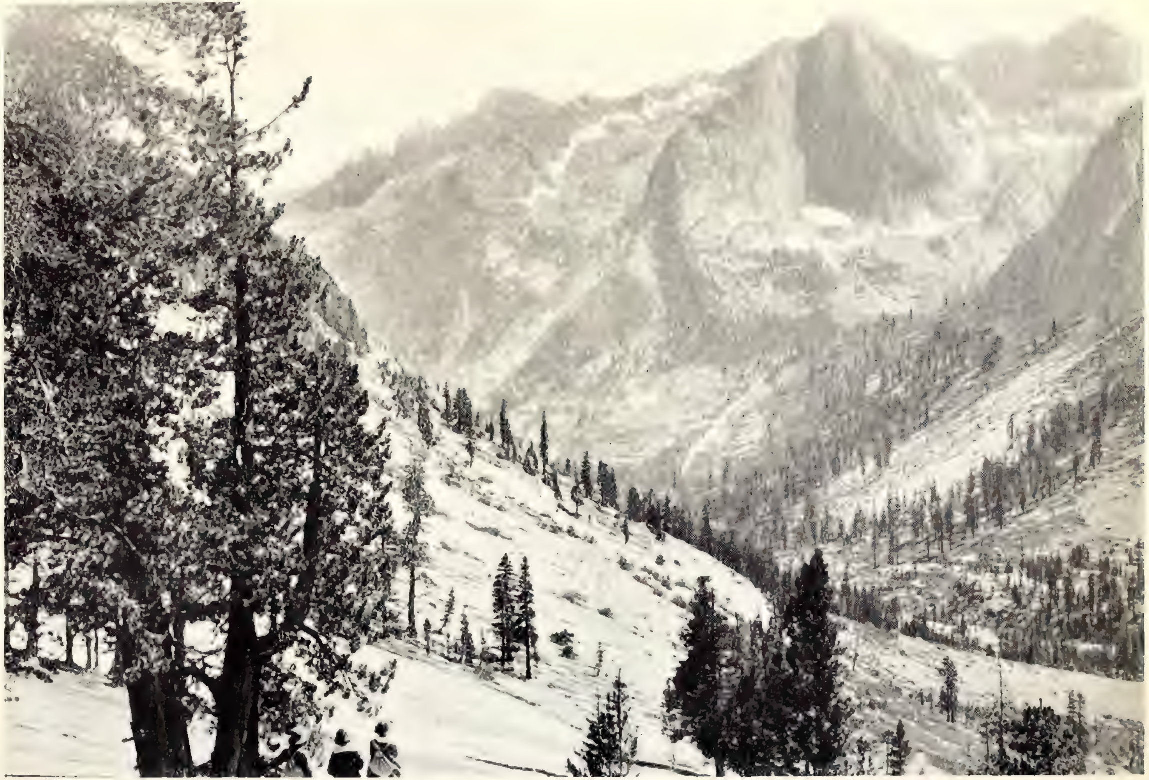
The known distribution covers a very restricted area in the Sierra foothills of Fresno County between the San Joaquin River and Kings River, the range of elevation being from 2000 to 3000 feet. More specifically, it extends from the Grapevine Spring southerly to Backbone Creek between Aubury and Oren and thence to the south side of the San Joaquin River on the Italian Bar Trail. It recurs again on Sycamore Creek, a tributary of the Kings River, which appears to be its most southerly station. Within this very limited area it is abundant in spots, blooms finely in June, and thus locally whitens the slopes on the lower borders of the Yellow Pine belt. Mr. Ralph Hopping has remarked to me that *Carpenteria* bears a superficial resemblance to a clump of California Laurel, and that at a distance one might be pardoned for mistaking it for that species. Growing in so narrow a habitat, it would seem in some danger of extermination, especially with the advent of the white man and his impinging accessories, such as herds and flocks. It may therefore be regarded as fortunate that its foliage is too bitter for sheep and that these animals will not touch it. What is too bitter for sheep is obviously safe from cattle.

But what of the long-lost station where Fremont originally collected this shrub? On his five exploring expeditions he crossed the Sierra Nevada at only five different points: at or near the modern Carson Pass; at Tehachapi; at or near Donner Pass; on the upper Sacramento; and at Walker Pass. Nowhere near any of these passes has *Carpenteria* been discovered, and it is too conspicuous a shrub to be missed in these days of closer botanical surveys. On the second expedition Fremont entered California from the Great Basin over Carson Pass, making a very terrible passage in the midst of winter. He left the Great Valley at the head of the San Joaquin through Tehachapi Pass. The track of the third expedition is, however, for us much more significant. Leaving Bent's Fort on the Arkansas River with his command in August, 1845, he moved in a general westerly direction through the Great Basin until confronted by the great Sierran wall. Here, at Walker's Lake, he found himself short of provisions. It was therefore determined to send the main command under Joe Walker southward with instructions to proceed through Walker Pass to the southern Sierras and winter in the valley



CARPENTERIA CALIFORNICA
A flowering branch from the individual grown in the Botanic Garden of the University of California. The inset shows a horizontal cross-section of the ovary, with the peculiar arrangement of the placentae and ovules.

Drawing by Dr. Helen Gilkey



LOOKING INTO THE HEAD OF GROUSE VALLEY, MIDDLE FORK OF KINGS RIVER, FROM DUSY CREEK
Photo by Walter L. Huber

of the Kern until relieved.* Fremont himself with a few men crossed the Sierras at or near Donner Pass, obtained a supply of provisions from Captain Sutter at New Helvetia (the later Sacramento), and immediately proceeded southward to join the Walker party. After passing the Auxumnee (Merced) River he entered the Sierra foothills and ascended to perhaps 3000 feet, coming out again upon the San Joaquin plain, which he reached on the seventh of January, 1846. He had been directed by Walker to ascend the Kern River, but after passing the main San Joaquin he encountered the "Lake Fork of the Tulare," which he mistook for the river mentioned by Walker, and which we now call the Kings River. His map accompanying the Geographical Memoir of Upper California† shows that he ascended the Middle Fork of Kings River and described a wide circuit about its headwaters.

This particular map is a famous document. Its title is "Map of Oregon and Upper California from the surveys of John Charles Fremont and other authorities. Drawn by Charles R. Preuss, Washington, 1848."‡ Since the Sierras at that time were all but utterly unknown except for Fremont's expeditions, the number and course of Sierran rivers are indicated with remarkable exactness. The South Fork of the Kings River is well shown, while the North Fork of the San Joaquin is shown to approximate the sources of the Merced. All of which seems to me to indicate that Fremont actually ascended to a certain degree the San Joaquin River and amongst other things collected, in January, 1846, on that river, the remarkable shrub *Carpenteria,* and that this station we know today is really the long-lost station for *Carpenteria,* than which no other shrub in the world perhaps is more localized.

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* Cf. Williamson, *Pacific Railroad Report,* vol. v, p. 17.

† Senate Document (30th Congress), Miscellaneous, No. 148.

‡ This is the map which first bears the legend "Chrysopylea or Golden Gate," at the entrance to San Francisco Bay. Preuss, the draughtsman, accompanied the expedition, as did also Kern, the topographer, who wintered with Walker on the upper Kern, and for whom Kern River was named.

GLENORA MOUNTAIN: A REPETITION OF MUIR'S CLIMB OF 1879

By E. Mallinckrodt, Jr.

◆

LOVERS of Alaskan lore are familiar with John Muir's story of his climbs on Glenora Mountain, told in his own incomparable way in the volume entitled "Travels in Alaska."* The thrilling rescue of his injured companion is passed over so modestly, however, that one must read Mr. Young's own story† to gain a true picture of Mr. Muir's prowess on this occasion and of his devotion to his friend. But, best of all, he who would learn what resolute men do on mountains should essay to traverse their routes.

The return of our hunting party to Telegraph Creek, some days before the departure of the boat down the Stikine River, offered the alluring possibility of seeing the view which Muir described as "one of the greatest and most impressively sublime of all the mountain views I have ever enjoyed." Incidentally, I should be able to check the height of the mountain by my own accurate aneroid. The imagined difficulty of finding a guide who knew the route up Glenora Mountain was dispelled by my outfitter at once. However, if any white man had climbed it in recent years he could not recall the incident. It may be remarked that the innocent traveler in that country will have no difficulty at all in securing the services of an Indian who knows the trail to any desired spot. I have suspected, from more than one disillusionment, that there is no distinction in the Tahltan mind between the objective existence of a trail and the subjective consciousness of being able to get there, trail or no trail. Such a distinction would be useless in a country where there are no trails anyway, and argues the weakness of the whites—so reasons the native, in all probability.

Assured by our well-wishers that we would be back by nightfall, and with lunch in our pockets, Bob, a Tahltan Indian guide, and I started off on horseback toward Glenora on the first of October. Over that old road, now much overgrown, many of the Klondike gold-seekers in 1898 had passed night and day in feverish haste. They journeyed up the Stikine River—generally after it had frozen—to Glenora, then a flourishing town, and down the Teslin, Hootalinqua, and Lewes rivers into the Yukon. A pitifully equipped lot they must have been for the work in hand. Bob recalled that among them there were Chinamen carrying their polished brass rice-bowls into the wilderness and men driving ox-carts, although beyond Telegraph Creek the road became a trail narrow even for the pack-train.

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* *Travels in Alaska.* By John Muir. Houghton Mifflin Company.

† *Alaska Days with John Muir.* By S. Hall Young. Fleming H. Revell Company.

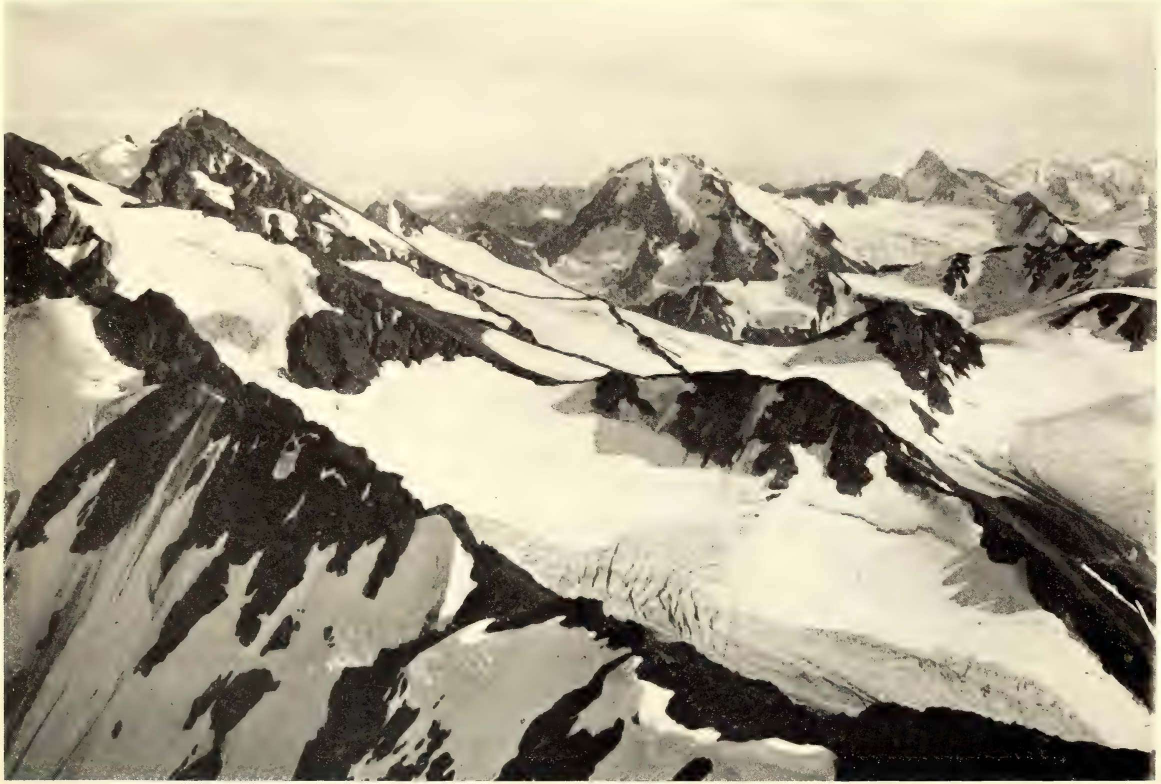
We had, for some miles as we rode, good views of the ample green slopes that lead up to the summit of Glenora Mountain. The summit itself, of grayish-looking rock, much foreshortened from our viewpoint, appeared above a small snow-field.

As Muir pointed out, the summit is not an isolated peak, but rather more in the nature of a jagged ridge broken by cliffs and gullies into separate pinnacles. Viewed later from the river steamer at various distances, the summit ridge appeared not to have any one pinnacle especially preponderating in altitude over the others.

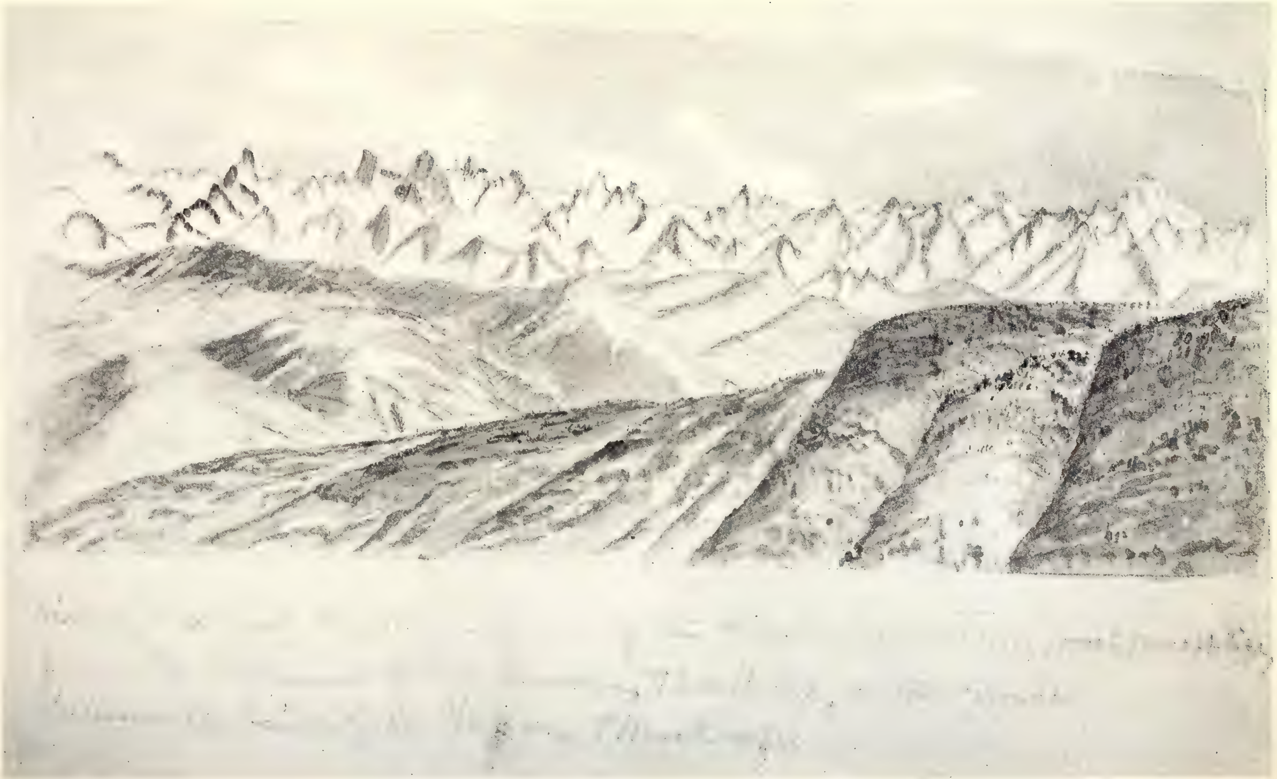
It soon became evident that Bob's Indian trail did not lead up the main mountain at all; so we continued to the base of a ridge, still about two miles distant from Glenora, which appeared to offer the most direct route through the timber and toward the summit. After lunch we began the climb up a gently rising timbered flat. Inwardly rejoicing that we had escaped the Scylla of real alpine difficulties, we were soon to be swallowed up by a vegetable Charybdis which, disguised by distance as a grassy slope, invites the innocent to destruction—at least to the destruction of his outer garments and his peace of mind. Thick growths of small trees, various sorts of willows, all but impenetrable horizontal alder thickets, some of the limbs of which were three inches thick, defended the lower ramparts of the mountain. The art of traveling through such obstacles is known to the native Indian, and my admiration for Bob grew as I found him keeping true to our general direction in spite of many windings. But our hard labors for an hour and a half only netted us a rise of about 1500 feet, or less than 1000 feet an hour. Another hour and a half brought us well above the timber to steep green slopes mostly covered with a luxurious growth—one might better say a thatch—of stunted evergreens and flat-spreading junipers difficult to pass in ascent and slippery in descent.

Working off to the right around several rock buttresses, which at first we took to be the main peak, we came in sight of the final rock-wall. It was then half-past six, and the aneroid indicated that we had ascended 4400 feet. We sat down on the grassy meadow for a moment's rest, as the work had been hard. I was reflecting that there was not much daylight left for climbing the thousand feet of rock-wall, which had not proved easy going even for Muir, when suddenly Bob became electrified and uttered the magic word "Bear!" "We go after him—what you say?" Unwilling to turn back, but knowing the force of the hunting instinct, and believing that we might make another ascent in the morning, I yielded. The bear was below us in the dwarf evergreens on a steep slope and had not seen us. As our only weapon was an army automatic pistol, I noted with some satisfaction that his color was black, indicating that he was not a grizzly. The Indians say that the winds travel up the slopes in the day and down at night, but the air was so nearly still that we could not be certain in which direction our scent was traveling. I knew Bob to be a good hunter, and we made a detour downward rapidly and nearly noiselessly. Our only chance was to try for a close shot. We came over a little wooded crest, and there, across a small ravine, was the bear, one hundred yards distant, already on the run. My firing had no more serious effect than to accelerate his speed, and he bounced out of sight down the slippery carpet of evergreens like a big rubber ball. Bob's stalk had been letter-perfect for a grizzly, but his smaller black cousin keeps moving and thus renders stalking more or less a matter of chance.

I was soon to learn something of what Muir and his injured companion went through in their descent by night, as the light was fading fast. When we reached the thick brush I was divided between the fear of getting branches in my eyes and, in my frequent slips, of falling on the point of my ice-axe, a useless encumbrance on such a mountain. In the alder thickets I was reduced to crawling through such holes as already existed, as my weight, unlike the massive Bob, was insufficient to part the branches. Frequently we lost each other in the darkness. The hope of a warm supper at the cabin of the river-boat's pilot decided us to go on to Glenora, although it was then nine o'clock. As we rode down what had been the main street in the once busy town, not a sound reached our ears and not a ray of light greeted the eye from the dimly discerned rows of cabins on



VIEW OF THE ALASKAN MOUNTAIN CHAIN
As seen from a summit near Mount Glenora
Photo by E. Mallinckrodt, Jr.



Reproduction of an original drawing by John Muir, found among his papers, and bearing the following legend: "View of a section of the main chain of the Alaskan mountains, 10,000 to 18,000 ft. high, from the summit of Mt. Glenora, 7200 ft. high, on the divide between the basins of the Yukon and Mackenzie."

each side of us. The loneliness of the forest is pleasant compared with the gloom of deserted human habitations. Rather than risk the exposure of a night in the open without blankets and food, we forced a window and entered a cabin belonging to an acquaintance of Bob's.

Next morning we retraced our steps, literally in many places, Bob showing me with evident satisfaction where we had broken twigs on the preceding day. Four hours' hard work put us at the point at which we turned back the evening before. We sat down beside an icy brook and ate the small remnant of our food. It was cold and there was a high wind. Swirling mist clouds hid the valley and the sun, although occasionally we could discern its disk through them. Advancing rapidly to the head of the grassy meadow, we climbed up what appeared to be an old terminal moraine overgrown with green, then over a long rock-slide, and arrived at a small snow-field which led directly to the steep rock and scree slopes of the final rock-wall. This we reached at a notch, or saddle, between steep pinnacles of disintegrating rock which at first sight appeared unscalable and dropped off sheer on the side opposite. The direction of the ridge seemed to be at right angles to the line of our ascent, so we turned to the left and climbed the first pinnacle. Seeing it was not the highest, we continued along the very broken and sharp crest of the ridge. My guide had now recovered from his feeling that such rocks were impossible, and, although his shoes had no edge-nails, he followed with great determination and natural skill. The rockwork would probably not compare in difficulty with that of a mountain like the Mitre at Lake Louise, but the quantities of loose rock everywhere rendered handholds and footsteps very insecure. From the top of a second rock-spire we saw, across another small pass, a much larger and higher rock-mass. This required careful work, as we had to find our route, but we surmounted it without any great difficulty. It was now nearly half-past three. Continuing forward across the small rocky summit, we saw through the mist squalls another mountain mass of apparently the same height, but separated by a pass of considerable width, at the bottom of which lay a glacier—evidently the "small residual glacier" noted by Muir.* Seeing that we were on the highest point of the ridge, we built the marker and put our names and the barometer readings in a tin can under the stones, a formality that caused Bob to remark, "Hope white man find my record some day." We reached Telegraph Creek at midnight, much to the relief of our friends, who intended to start a searching party the next day.

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* *Loc. cit.*, p. 52.

The green ridge that we had ascended is bounded by two streams which, while spreading far enough apart, perhaps four miles, at their junction with the Stikine to form the flat on which the old town stood, form converging ravines toward the top. From the upper slopes of the ridge, the town lay perhaps halfway between south and southwest. This agrees with Muir's statement that the mountain lies northeast of the town.

It is open to question whether our route was throughout identical with Mr. Muir's. Mr. Young* mentions "a small glacier on our right" that "had to be crossed." We, on the contrary, did not have to cross this glacier, and it appeared on the left-hand, and far below us only as we neared the end of our rather long traverse across the ridge crest. Our general direction up the grassy slopes was northerly, and to gain the meadow where we lunched we made a considerable detour to the right, having elected to work around the rock-shoulders occurring at an elevation of 3700 feet in this manner. If Muir turned to the left at this point, it would in all probability account for Mr. Young's observations. In fact, in descending, we noted that the most direct route was across a portion of the glacier, but the descent from the rocks to the ice appeared so precipitous that we dared not try it. Muir doubtless found some safer route; but the feat he performed in getting the injured man down was remarkable in the extreme and cannot but heighten our admiration for the great mountaineer.

I am reliably informed that Mr. Muir carried a valuable aneroid on his mountaineering trips, and Mr. Young† states that the instrument showed "a height of about seven thousand feet at the base of the great cliff that crowned the summit." Muir‡ says: "The peak on which these observations were made is somewhere about seven thousand feet high," but he believed the town of Glenora to have an elevation of one thousand feet, whereas its true altitude is about 450 to 500 feet.§ The instrument I carried was a Goulier aneroid having a dial about one and three-quarter inches in diameter. It had been under test at the Bureau of Standards and was presumably in good order. Upon my return they very kindly tested it again and found it to be in excellent working order. The indicated altitude* was 6144 feet above Glenora, or approximately 6600 feet above sea-level. Six months later the same instrument, carried on foot to the top of Mount Wilson (Pasadena), indicated about one hundred feet higher than the true height of 5704 feet. Until better data are obtained, Muir's estimate must be reduced 500 feet and the height of the mountain, in round numbers, placed at 6500 feet above sea-level.

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* *Loc. cit.*, p. 25. I can see no resemblance between Glenora Mountain and the illustration in this book.

† *Loc. cit.*, p. 26.

‡ *Loc. cit.*, p. 95.

§ Private communications from Department of Mines, Province of British Columbia.

One fortunate circumstance compensated, partially at least, for the loss of the view at the summit. During both climbs the weather had been clear on the lower slopes and I was easily able to locate the mountains, one of which I had climbed, surrounding a lake called "Glacier Lake," where we camped for a week. From a point halfway up Glenora Mountain, this mountain, which is twenty or twenty-five miles distant, bears about thirteen degrees east of true (geographic) south. We called it "Almira Mountain," and from its summit, 7700 feet above sea-level, or about 4700 feet above the lake, (the day being exceptionally clear), the view was one of awe-inspiring beauty. The immense snow-fields were more billowy and a purer white than I had ever seen in Switzerland. Perhaps it was the effect of contrast, as the exposed rock appeared black where the snow had slipped away in fanlike slides. The same difference in the quantity of snow was to be here observed as exists between the mountains about Lake Louise and those of the Selkirks at Glacier, only to a greater degree. In fact, so great was the profusion of snow and ice, even on the lower mountains, on one of which I stood, that all had the appearance of peaks of great altitude. To the west and northwest, as Muir said,† "More than three hundred miles of closely packed peaks of the great Coast Range, sculptured in the boldest manner imaginable, their naked tops and dividing ridges dark in color, their sides and cañons, gorges, and valleys between them loaded with glaciers and snow. From this standpoint I counted upwards of two hundred glaciers, while dark-centered luminous clouds with fringed edges hovered and crawled over them, now slowly descending, casting transparent shadows on the ice and snow, now rising high above them, lingering like loving angels guarding the crystal gifts they had bestowed."

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* The actual readings were: 9 A.M. at Glenora, 745 mm.; 1:30 P.M., 630 mm.; Summit about 3:15 P.M., 596 mm. 6 P.M. (return to Glenora), 744 mm. The altitude scale on this instrument, according to the Bureau, is correct for a temperature gradient which may be considered a good yearly average value for the United States.

† *Loc. cit.*, p. 93.

The photographs, while not doing full justice to the great horizon of peaks by any means, are presented because they represent a considerable arc of what he thus described. These rocky giants of the New World, wrapped in eternal snow and ice, send out their challenge to adventurous mountaineers and await an answer.

> *Life consists with wildness. The most alive is the wildest. Not yet subdued to man, its presence refreshes him. One who pressed forward incessantly and never rested from his labors, who grew fast and made infinite demands on life, would always find himself in a new country or wilderness, and surrounded by the raw material of life. He would be climbing over the prostrate stems of primitive forest trees.*
>
> HENRY D. THOREAU

ASCENT OF MOUNT MORAN, GIANT OF THE TETONS

BY LEROY JEFFERS, A.C., F.R.G.S.

❦

OUR mountaineering experiences of last summer commenced with the traverse of Mount Mansfield, Vermont, in a storm. My wife and I descended its northern cliffs and found our way down a precipitous ravine for two thousand feet into Smuggler's Notch. In the Canadian Rockies we again viewed the wonders of the Yoho Valley, adding to our peaks in that vicinity the northern *arête* of Mount Marpole, an interesting climb up walls of disintegrated rock. With long journeys afoot we traversed the northern section of Glacier Park in Montana, finding no habitations, but fine mountain scenery, and we continued through Waterton Lakes Park into Canada. Afterward we visited the Pacific Coast and returned to climb the hills of Lafayette Park in Maine. Perhaps our most interesting experience was in the Teton Range south of Yellowstone Park.

Scenically, the finest approach to the wonders of the Yellowstone is by way of its eastern entrance through Shoshone Cañon. Climbing through tunnels in towering walls of gray and pink, we came to the great Shoshone dam, which has formed a lake ten miles in length. In the forest beyond there are many rocky pinnacles of fantastic form, the most beautiful group being called the Holy City. After entering the park there is a distant view from the heights of Yellowstone Lake, with the Tetons looming majestically on the horizon. After renewing our acquaintance with the exquisitely colored Grand Cañon of the Yellowstone, with its magnificent falls, we ascended Mount Washburn for its comprehensive view of the park. Visiting the hot springs and geysers, we finally left Old Faithful for the seventy-mile trip to Moran on Jackson Lake. At Yellowstone Lake we paused to view the bubbling paint-pots with their rose-colored mud. Passing Lewis Lake and river, with colorful meadows and glimpses of deer, of elk, and of moose, we came finally to the crooked Snake and the long valley of Jackson Lake. This once beautiful lake has been recently dammed for irrigation, but in raising its level the trees on its shores were left standing, so that at low water there is a large area of utter devastation. It is proposed in like manner to make reservoirs of Leigh and Jenny lakes, which nestle against the base of the range to the south. These little lakes are among the most beautiful in America and should receive national protection.

From the eastern shore of Jackson Lake there is a glorious and impressive view of the Teton range, which rises Himalaya-like across the lake. Adorned with glaciers and cathedral spires, the peaks cluster about the Grand Teton, which looms above them all to the south, 13,747 feet in height. Its summit is about 7000 feet above the surrounding country. Although limited in extent, the range is peculiarly rugged and in some respects unique among American mountains. Its many unclimbed summits offer most interesting rockwork, for as yet they are almost unknown to the mountaineer. These fascinating peaks are composed of many-colored rocks and are curiously varied in form. To the south of the Grand Teton a naked gray peak seems as if it had been lassoed, for a narrow chimney springs from base to summit. On the inner cliffs of the last great peak to the north, Mount Moran, a gigantic buttress of brown rock climbs boldly to the top of the mountain. Adjacent to Yellowstone Park, and unequaled by any mountains within its borders, this splendid range should be added to the park as a fitting climax to its wonders.

Second in height in the range, Mount Moran (12,100 feet) towers above Jackson Lake, unique in its massive grandeur. While the Grand Teton had been climbed, the sheer cliffs of Mount Moran were said to be unclimbable. Several mountaineers had reached its eastern glacier, but had not gone above it, while others had circled the mountain, finding precipices on every side. Ben Sheffield, of Moran, had spent many years in hunting sheep on its crags and in seeking a route to its summit, but he had finally concluded that staples must be driven into its cliffs before it could be conquered.

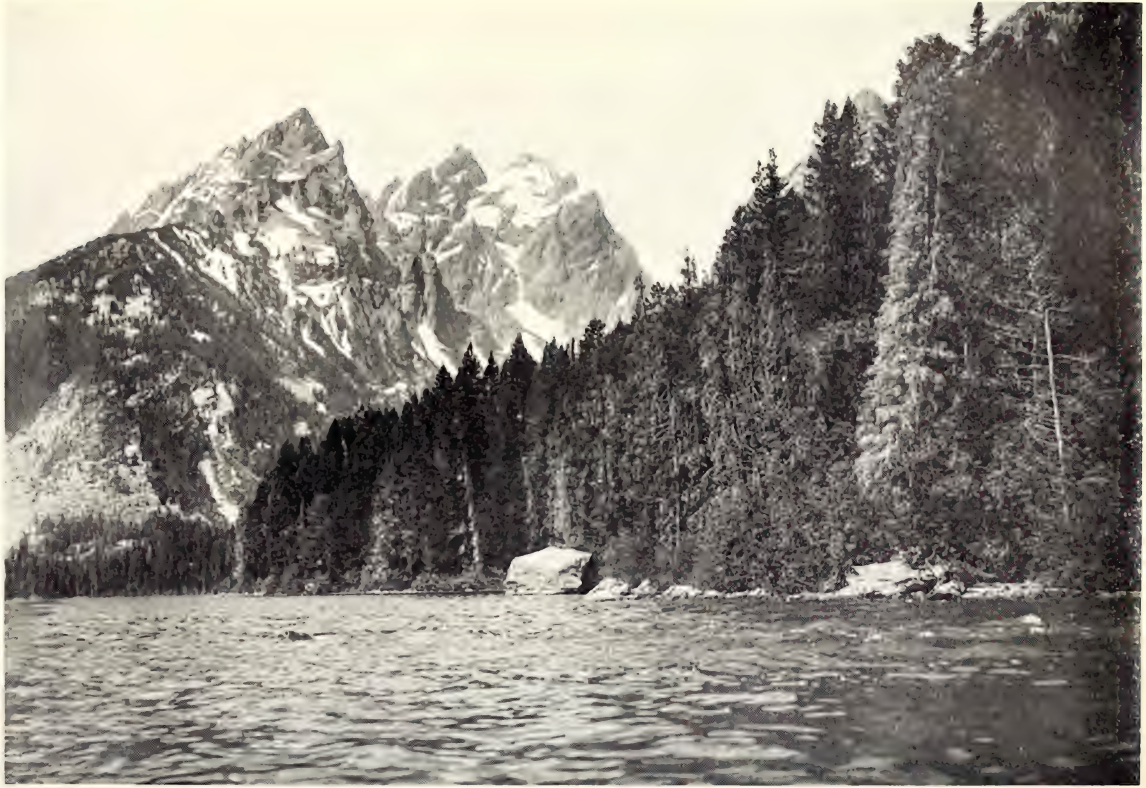
Interested by these reports, we decided to have a near view of the mountain, and in a few hours after arriving at Moran we were on our way across the lake. It is about nine miles to the opposite shore. We landed by moonlight, allowing the launch to return without arrangement to call for us on the following day. Finding it unprofitable to work our way through the fallen timber, we spent the night in our sleeping-bags near the shore. As so many had failed to find a route on its eastern side, we had landed well to the north of the glacier, intending to investigate the northern face of the mountain. Early on the morning of August 11, 1919, we worked our way for several miles through the forest tangle and up a long steep slope to the cliffs, but we found them quite inhospitable at our point of attack. It was an unusually hot day, and I was not in need of the exercise of carrying a thirty-five-pound pack, but thought it might be pleasant to visit the ice cave of the glacier. In order not to lose elevation we worked our way south across the eastern face of the mountain, crossing troublesome ravines and finally reaching the gorge at a point a few hundred feet below the glacier. Here we left our bags beneath a great rock and ascended to the ice cave, which we entered for a considerable distance. Its portal framed a view of the lake with little islands shimmering far beneath us in the heat.

Unfortunately, it was after one P.M. and avalanches were descending across the glacier, but we had insufficient provisions to allow us to remain another day, and I was desirous of examining a possible route up the very steep snow-filled couloir. In traversing the slopes I had pointed to a cabin in the distance to the south, and I mentioned that a camp was located several miles beyond, at the southern end of Leigh Lake. There are no trails in the region, but abundant evidence of bear and other animals. Leaving my wife to return to our bags, with the remark that she might remain until morning, I started up over the glacier, threading its crevasses and finding delicate work in crossing its yawning *bergschrund,* whose great chambers of blue and green led to sudden depths which I was not desirous to fathom. As I surmounted the wall above, the avalanches which I had hitherto avoided closed in on my pathway and spread out over the route of my ascent across the glacier. Boulders of many tons in weight came leaping and crashing from the heights, seeming to shake the rocks about me and passing at great speed within a few feet of my precarious foothold. As there was no alternative route up the peak in this direction, I went a little farther, concluded that there was not a fair opportunity for mountaineering skill, and reluctantly descended across the glacier while a thunder-storm was deadening the roar of the avalanches.

Deciding to climb the *aiguille* on the left of the glacier, I worked my way upward in the rain, while I studied the walls of the main peak. Discovering an opportunity to attack the cliffs near the glacier without reascending it, I hastened to descend the *aiguille* and recommenced the climb after four o'clock. Working upward into a concealed ravine, I ascended for several hundred feet to the eastern *arête* of the mountain. Following the ridge for a little distance, I enjoyed thrilling views of the glacier beneath me and of the tremendous vertical walls on its northern side. To the east was a varied and extensive panorama, beginning with little lakes and forests along the base of the range and reaching far across the desert to mountains on the horizon. Summer clouds and rainbows hovered over the valley of the Snake and thunder-storms were raging in the distance. Leaving the *arête,* I traversed the face of the mountain parallel to the glacier until I entered a long chimney. Far too soon the shadow of Moran reached over Jackson Lake, the sun set, and twilight veiled the distant view. In the failing light I forced my way upward, reaching and straddling from side to side of the chimney in search of handholds and footholds. In the absence of a companion on whose shoulders I might stand, my ice-axe was occasionally useful, although it was in the way when I surmounted a beetling crag. Here and there boulders were insecurely lodged in the chimney and I had to throw my rucksack above while I struggled to surmount them in safety. At one point it was necessary to make a short detour on the smooth, steep surface of the surrounding rock, hanging on by friction rather than by any legitimate hold. For many hundred feet I found athletic exercise which would have been more pleasurable earlier in the day. Above the chimney was a vertical cliff and slanting rocks with almost no handholds, which threatened me with an unhindered descent for thousands of feet on the northern face of the peak. Reaching the highest point of the mountain, I found a level surface, strewn with a few loose rocks, on which no foot had trod. It was possibly 150 feet in length by twenty-five in width, and from its western end I looked down to a *col* probably less than a hundred feet below me. Beyond it rose a summit of the mountain similar to the one on which I stood, but it was surmounted by a large mass of loose rocks which made it a little higher. From the lake my summit appeared the higher.

At any other time I should have crossed the *col,* but I had reached the extreme limit of human possibility. It was nine o'clock at night and darkness was upon me. Instead of moonlight, an electrical storm was sweeping toward me from the Grand Teton, and the gale was already driving its sleet furiously against me. Placing my name on a slip of paper in a tin can, I hastily piled a few stones above it, and pocketed samples of the rock. I had remained on the

TETON RANGE AND JACKSON LAKE, WYOMING
Mount Moran at the right; Grand Teton at the left
Photo by U. S. Reclamation Service



THE TETONS FROM JENNY LAKE

summit but a few moments, viewing all at a glance, and I was now to face the extreme peril of a descent in partial darkness, for the moon was veiled for several hours. Asking for Divine protection, without which I could never have descended in safety, I cautiously felt my way down the perilous upper cliff. The lack of handholds made it an exceedingly delicate undertaking, and I was considerably encouraged on reaching the head of the chimney. Facing outward, I felt for footholds and handholds, often being able to make fair progress. Finding it impossible to carry my axe, I was occasionally forced to let it drop ahead of me, with the inevitable result that it finally bounded downward, striking fire for hundreds of feet toward the glacier. This may have been providential, for I then realized that I had come too far down cliffs on which it would have been impossible to complete the descent. Climbing again to the *arête,* I retraced my route of ascent and found my ravine, but not the point where I had entered it from below. The moon had appeared, and I continued over cliffs which one would not be likely to climb by daylight, at last reaching the bed of the stream considerably below the snout of the glacier. It was tiresome work over the loose boulders and down an icy wall to the overhanging rock where I expected to find my wife and sleeping-bags. At 1.30 A.M. I arrived to find neither wife nor bags. Only the voice of the torrent responded to my calls. It seemed probable that my wife had taken our bags and gone for assistance. As I did not wish to search for a rescue party who might start to find me in the morning, I decided to travel toward the cabin we had seen in the distance.

All night long I forced my way downward along the stream, fighting the thickets of alder and willow and jumping from boulder to boulder of gigantic white quartz which had come down from the mountain. Climbing the ridge to the south, I battled in the dark with fallen timber and clung to branches to prevent falling over cliffs. As daylight approached I rested for a few moments, and then pressed on across a morass, arriving at the cabin to find it deserted. Pinned to the logs was a note from my wife that she had spent the night there. Hastening on to Leigh Lake, I shouted and heard a distant response from the western shore where my wife was fighting her way through the thickets of jack pine. After joining her we followed the eastern shore to its lower end, where we found a camp and then lay down for a few minutes' rest. I had taken almost continuous exercise for nearly thirty hours and had climbed about 7000 vertical feet. Under ordinary conditions a competent mountaineer should not find the mountain excessively difficult—if he knows the route.

Meanwhile my wife told how she descended near the stream after we had parted at the glacier. The avalanche, which to me had seemed to spread out over the glacier, had continued down the gorge. For over fifteen minutes by her watch the great boulders had torn past her, jarring the rock beneath which she crouched. She was unable to find our bags, for they had been carried away, although we had left them far below the glacier. After climbing up and down in search of them for several hours, she worked her way to the cabin before dark.

We were soon on our way to Menor Ferry across the Snake, where we footed it for several hot miles to the main highway, secured a car, and reached Moran late that night. In forty hours I had enjoyed very little sleep, but nothing can dim my memory of the giant Tetons, soft and blue against the orange sky. Early in the morning we started on a long day's ride to the northern entrance of the Yellowstone. Regretfully we left the mountains rosy in the morning glow, while peacefully the full moon lingered over Mount Moran.

SPLENDORS OF THE POOR

If rank and wealth within the mind abide,
Then gilded dust is all your yellow gold.
Kings in their fretted palaces grow old;
Youth dwells forever at Contentment's side.
A mist-cloud hanging at the river's brim,
Pink almond flowers along the purple bough,
A hut rose-girdled under moon-swept skies,
A painted bridge half-seen in shadows dim,—
These are the splendors of the poor, and thou,
O wine of spring, the vintage of the wise.

HSÜ KUNG T'U,
834-908 A. D.

YOSEMITE NATURE GUIDES

By C. M. Goethe, President California Nature Study League

IT is a far cry from the spreading ancient beeches of Denmark's Royal Deer Forest to the towering yellow pines of the Yosemite Valley floor. Studies, however, made under those beeches of directed recreation of blind children, of their delighted enjoyment of the one bit of nature-study possible to them, the music of wild birds, grew into similar enjoyment last summer among the pines of the Sierras, almost antipodal to Denmark, by numbers exceeding one-sixth of the total attendance at the World Series at Cleveland.

The world survey, of which the above Danish incident was a part, began at a California orphanage. This had been wisely located, not amidst the city's din, but on a peaceful farm. Here attempts were made to develop character among the motherless through play. Efforts were made to prepare them for life's battle by using the ways of the gentle Froebel, instead of the usual withering, institutionalizing methods. Out of this orphanage laboratory came the concept that America had developed in her recreational culture some things unique, things worth offering abroad. One was the playground under direction as seen in the high-type American city. Another was the use of the American public-school plant as a day-and-night community center for grown-ups as well as for children. Europe, the world, were searched in vain to find any similar evolution. Journeys were taken by rattling *stoeljahrre* along Norwegian fiords, by sand-crunching camel across Saharan sands, by dugout canoe through rattan-festooned Javan jungles, by squeaking wheelbarrow along mucky Chinese byways, by patient elephant to where the Grand Moguls had built, planning like Titans and finishing like jewelers. These journeys opened world vistas, not only of the possibilities of such education through play, but also of internationalizing recreation, of making available for all mankind the good evolved in the recreational culture of each nation.

Out of these world-wide labors came thus one vivid concept: that America could profitably import, as well as export, crystallized recreational experience. One chapter only of the resulting history can be opened in this space before Sierra Club eyes. That chapter is the organization of the California Nature Study League. This was aimed to test whether, as a part of this internationalizing recreation, there could be transplanted to our America the nature-study-field-excursion, which seemed the best thing evolved in the recreational culture of Nordic (or blonde) Europe.

This was therefore scrutinized from Scotland to Switzerland, from Norway to Holland. Near Melrose Abbey, whose buttresses in the pale moonlight still "show ebon and ivory," dancing-eyed little girls told of their joys on such nature-study-field-excursions. Scottish bairns called them "school treats." One sandy-haired lassie of nine, with an attractively freckled nose, gave testimony that "A picnic is only a picnic—where you wear stiff clothes and, with solemn people, drink tea under the oaks. On a school treat, however, you go out among the heather and catch butterflies and beetles, and it's *so* much more fun than a picnic." In the Alps green-hatted boys and velvet-bodiced girls climbed Rigi or the Rotstock for edelweiss or alpenrosen, simultaneously absorbing learning during what the wise Dr. Hetherington reminds us are, educationally, life's most precious years. Under Zuyder Zee windmills were found teachers who were born disciples of Audubon. Therefore, along brick-paved Holland dikes tiny wooden shoes clattered excitingly when an older boy found a bullfinch's nest with young. In Germany the nature-study-field-excursion, sad to relate, was found to be developed, under Hohenzollern guidance, as a part of the military machine. Sturdiness of leg muscle, stoutness of back trained to rucksack, quickness of eye in detecting coloration of flying bird, all were turned, like expert knowledge of poisonous gas in mine or in chemical *fabrik,* to further Mars' interest. But even notes of "wandervogeling" and other German phases of the nature-study-field-excursion were utilized in introducing, by means of the California Nature Study League, this bit of blonde Europe to Pacific shores.

One phase only of the league's resulting activities may be described here. That is the nature-guide movement, which utilized while walking the instinctive interest in bark-beetles, water-ouzels, bears, gentians, dodecatheons, arctic willows, sequoias, for educational purposes, under high-power guidance. That form of play which included the love of hiking, the lure of curving trail, the primordial joy in the music of cascading water or soughing pine, the

A NATURE-GUIDE EXCURSION IN YOSEMITE
Photo by Pillsbury

BLIND BOYS BEING TAUGHT TO IDENTIFY BIRD-SONGS
Photo taken in the Royal Deer Park near Copenhagen, Denmark

NATURE-STUDY GROUP IN YOSEMITE

happiness of fellowship with chipmunk and with woodpecker, were made, as in similar work in blue-eyed Europe, a means of such education through play, of recalling race-old memories in the cramped city, of building for cleaner citizenship in child, adolescent, adult.

The first nature-guide experiments came in 1918 at Catalina and at Yosemite, under Dr. Harold Bryant, of the University of California and of the State Fish and Game Commission. Crude as these were, the possibilities of thus transplanting this Nordic institution to California soil were apparent. For the wider work of 1919 the string of resorts bordering Lake Tahoe in the Tahoe National Forest was selected. Resort managers there were quick to see the commercial values of the nature-guide movement. They therefore co-operated splendidly. From Tahoe Tavern to Fallen Leaf Lake were given nature-guide hikes, campfire talks, lantern-slide lectures on Sierran fauna and flora, moving pictures of California wild life. Nature-study libraries were opened at each co-operating Tahoe resort. Children were directed in nature-play along unique lines, including such blindfold games as the bark-feeling plays and the herb-smelling frolics. Director of National Parks Stephen T. Mather quietly studied the Tahoe experiment. He decided the results merited its extension into Yosemite National Park. At his 1919 Christmas party in Yosemite Village he authorized the California Nature Study League to open negotiations with the California Fish and Game Commission, which developed into the unexpectedly wide success of the 1920 Yosemite summer.

One month's season at Tahoe in 1919 was expanded at Yosemite to three months—June to August, 1920. Dr. Bryant and Dr. Loye H. Miller again were in charge. The program was developed to include occasional sleeping-bag trips into Yosemite's "Back of Beyond," those High Sierras whose treasures have become world property through the pioneering of John Muir and his associates of the early Sierra Club. A wild-flower show was continuously conducted in Yosemite Village. The nature guides assisted in entertaining practically all delegations visiting Yosemite in 1920, from the Congressional Appropriations Committee to the Board of British Drapers. Some 27,047 citizens thus made use of the 1920 Yosemite National Park Nature Guide Service.

This nature-guide movement should be solidified into a permanent institution, not only in Yosemite, but in all national, all state parks. The 1920 Yosemite campaign became possible only when Director Mather out of his private fortune subscribed the amount necessary to be added to the sum appropriated by the State Fish and Game Commission. Under ideal conditions this contribution of Director Mather's should be replaced by Federal funds. If each Sierra Club member today would write to his two Senators and to the Representatives of his state, this ideal would be translated into an actuality. Completed would be the work begun to interest Congress therein when the Congressional Appropriations Committee explored Yosemite Park under the nature guides.

Such a modest appropriation would never be felt by the American taxpayer. In the August number of the *Scientific Monthly,* Dr. Rosa, analyzing the current congressional budget, indicates that, of a per-capita appropriation of little more than $50, war receives $47.99. Education of all kinds is cared for by *six cents.* To this paltry six cents per capita the addition of a thousandth of a mill for nature guides, to make more sensibly enjoyable the visit of the tens of thousands who find relaxation in our national parks, would not be noticed, even by the heads of such families as made Roosevelt smile.

THE CAMPAIGN FOR PRIVATE FORESTRY

By Donald Bruce
Division of Forestry, University of California

CALIFORNIA contains some twenty million acres of forest land. If managed under forestry principles, this area, now largely uninhabited, is capable of supporting directly an ultimate population of about one and a half million people, of supplying all the wood needed by the remaining population and industries of the state, and of producing a surplus for export to less fortunate regions farther east. Today, however, forestry is being practiced on but approximately half of this land, for this is the proportion that is in our national forests. Private owners of timberland in the past have done practically nothing toward insuring a second crop of timber.

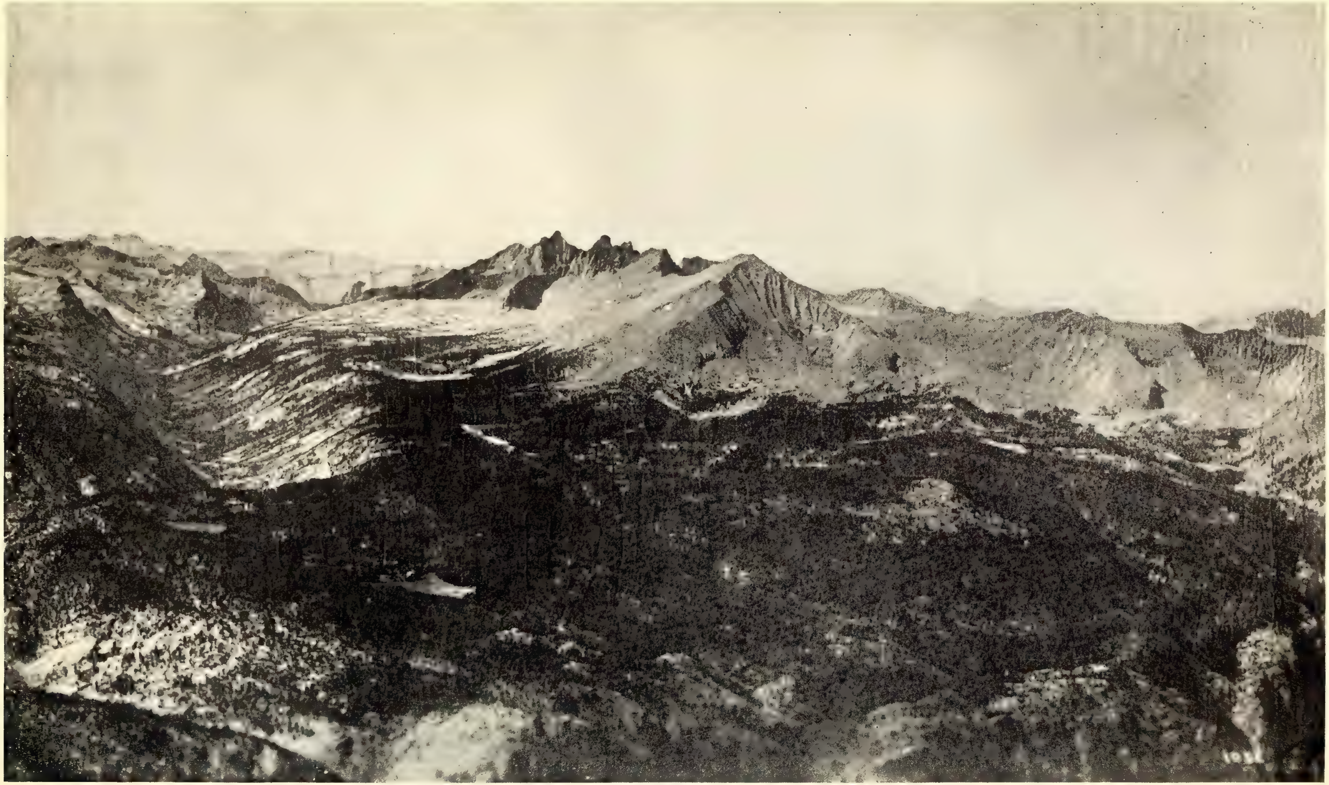
The present agitation for an extension of the practice of forestry to privately owned timberland is therefore of great importance to this state. This movement is relatively recent, for although the need has long been realized it is only since the war that definite programs have been crystallized and urged by powerful influences. There are two main rival plans advocated (with several variants), commonly referred to as the Pinchot and the Graves-Greeley programs.

The first of these was prepared by a committee of the Society of American Foresters, of which Gifford Pinchot, the great leader of the conservation movement, formerly United States Forester, and now State Forester of Pennsylvania, was chairman. It proposes national legislation, creating a commission consisting of the Secretary of Agriculture, the Secretary of Labor, and the chairman of the Federal Trade Commission, with far-reaching power to regulate the logging of privately owned lands. Working through a system of regional organizations based largely on the existing Forest Service, this commission would be authorized to "fix standards and promulgate rules to prevent the devastation and provide for the perpetuation of forest growth"—in other words, to *compel* the practice of forestry. It would also be empowered specifically, in connection with this primary purpose, to require standardized accounting systems and periodical statistical reports, to control production in certain emergencies, to sanction co-operations of lumbermen when in the public interest, to encourage forest-insurance agencies, to create national forest loan banks (similar to the farm loan banks), to officially recognize regional and national councils of lumber employers and employees, and establish penalties for the enforcement of the law. Provision is also made for an increase in the area of the national forests, and to authorize direct manufacture and marketing of forest products therefrom by the Forest Service.

The Graves-Greeley program is so named because it was originated by Henry S. Graves, former United States Forester, and is being supported by his successor in that position, Forester W. B. Greeley. Its provisions are as follows: 1. Federal aid to states and forest-owners in fire protection for both virgin stands and second growth; 2. A federal survey of the nation's timber resources, present and future; 3. An augmented research program by the U. S. Forest Service; 4. An increase in the area of the national forests; 5. Reforestation of denuded areas within the national forests.

The first of the two fundamental differences between these plans is that while the former proposes coercion of timber-owners the Graves-Greeley program relies on persuasion and co-operation. In the former a national commission is to determine upon certain minimum requirements in forestry and enforce the same. In the latter direct aid will be offered in fire protection alone (which is, according to Greeley, seventy-five per cent of our forestry problem), and for the rest the National Government will limit itself to an educational campaign. This difference has been sharply emphasized, moreover, by the manner in which the two plans have been advocated. While Greeley has repeatedly consulted with representatives of the lumber industry, the proponents of the alternative method have stated from the start that education and persuasion of the lumberman have already been abundantly attempted in vain, and that only through coercion is there any hope for progress.

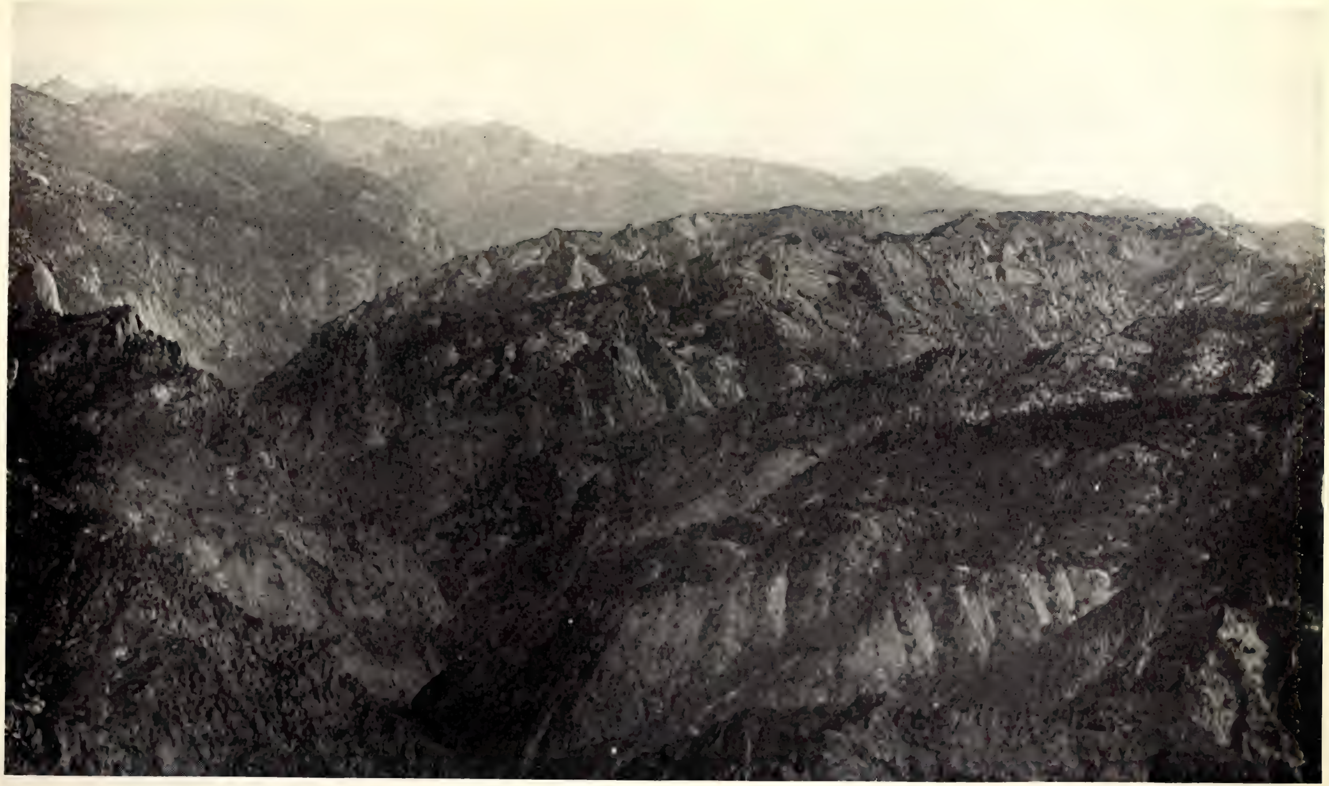
The second difference is in the question of national or state control. The advocates of the Pinchot plan argue that those states which have little or no forest area will suffer most from forest devastation, that only in national legislation will their influence be properly felt, and that to the lumber industry itself fairness demands a uniformity of restrictions and obligations which could not be obtained by individual state laws. On the other side is emphasized the great diversity of conditions between the different timber-producing regions, which



AEROPLANE VIEW OF THE KAWEAH PEAKS

Showing the Big Arroyo, Moraine Lake, Upper Funston Meadow, and the Chagoopa Plateau

Photo by Fifteenth Aerial Photographic Section, Air Service, U. S. Army Published through authority of Chief of Air Service. (Not to be copied)



AEROPLANE VIEW OF MIDDLE FORK OF KINGS RIVER
Showing Tehipite Dome, the Palisades, and the Monarch Divide

Photo by Fifteenth Aerial Photographic Section, Air Service, U. S. Army   Published through authority of Chief of Air Service. (Not to be copied) would make difficult any centralized control, and the probability of conflicts in jurisdiction between the nation and the individual states.

The professional foresters of the country are divided in opinion on the relative merits of these two plans. A referendum vote by the Society of American Foresters apparently indicates that a slight majority favors national coercive legislation. The lumbermen have very naturally rallied to the support of the more moderate alternative, some because they heartily believe in its wisdom, and others, perhaps, because they see in it the lesser of two evils. Whatever the reason, they are active in support of the Graves-Greeley plan.

Both programs will be before the next Congress. The former has already been crystallized into the Capper Bill (Senate Bill 4424), and the latter will be introduced later in the form of definite legislation. So much influence has already been mobilized behind both plans that some action is confidently expected.

In the meantime, and without waiting for the National Government to act, considerable progress is being made in California. A notable example is in connection with the so-called "light-burning" controversy. For many years there has been carried on at times a rather acrimonious dispute over the wisdom of the fire-protection plan of the United States Forest Service. Its opponents claimed that it was a mistake to attempt to completely eliminate fires from our forests, since in their absence inflammable "debris" (under which term were often included young trees) would accumulate until at last a holocaust would be inevitable. This the Forest Service denied, and insisted that even a "light" fire caused more damage than was appreciated by the casual observer. The controversy seemed to be resulting in nothing but hard feeling until about a year ago, when a joint committee was formed to study this problem scientifically, composed of representatives of the Forest Service, the State Forester's office, the Sierra Lumbermen's Association, the Southern Pacific Railroad (as the largest timberland-owner), and the Division of Forestry of the University of California. This committee has not yet announced any conclusions, but considerable progress has been made, and the question has been removed from the realm of controversy into that of harmonious scientific investigation. Since adequate fire protection is an essential foundation to any system of forestry, this may be considered valuable progress, and obviously along the lines of the Graves-Greeley plan.

The State Forestry Commission has moreover announced a progressive program which it is going to ask the legislature to support. It involves increased expenditures for fire protection of timberlands outside the boundaries of the national forests, in co-operation with the counties and private owners on the one hand, and with the National Government on the other, and the initiation of a system of state forests through the purchase of desirable cut-over land. This program was discussed recently before a meeting of representative lumbermen and foresters which unanimously indorsed it. The commission also urged an extension of the work of the joint committee already referred to, to cover any other disputed questions which might be presented to it, and in preparation for such work a representative of the Redwood Lumbermen's Association has been added.

The lumbermen of the state, too, are (although in as yet rather too local and individual instances) commencing to take steps toward putting their industry on a permanent forestry basis. The Union Lumber Company, for example, which has for many years done admirable pioneer work in the fire protection of its virgin timber, has recently called on the University of California for advice in the handling of its cut-over land. In accordance therewith, it is now planning to extend its fire-protective system to this land, and to conduct a series of experiments on natural and artificial methods of reproduction. The Fruit Growers Supply Company, to mention another instance, is negotiating an agreement with the Forest Service which will probably result in the cutting of the timber tributary to its new sawmill at Susanville in complete accordance with the silvicultural methods in effect on national forest land. Practically all the lumber companies, moreover, whose lands are within the boundaries of the national forests are co-operating with the Forest Service in fire protection of both virgin timber and cut-over land by contributing a pro-rata sum of money based on their acreage.

So it may be seen that the movement toward private forestry is gaining headway. National legislation either compelling or encouraging it may confidently be expected in the near future, and in the meantime, without waiting for Congress to act, California is going ahead on her own account and is preparing to make true progress in solving a problem of national importance.

THE 35th DIVISION IN THE VOSGES MOUNTAINS

By Colonel N. F. McClure, Cavalry
(Brigadier-General, National Army)

❧

FOR centuries the Vosges Mountains have been famous in folklore, song, and story. They lie in western Alsace and southern Lorraine. From their eastern slopes flow the Thur, the Fecht, the Weiss, and many other tributaries of the Ill and the upper Rhine. In the lakes and springs of the western slopes the Meurthe, the Moselle, the Verouze, and the Montagne find their sources. The whole country is one of splendid grandeur.

Among these hills the fires of patriotism and personal liberty early began to burn. Many years before the French Revolution the people of Alsace had taken steps to establish and guarantee their civil rights. They gave the most loyal support to the government established by the Directory of the Revolution, and to those of the Consulate and the Empire which followed. During this period eighteen Alsatians arose to the rank of general officer, and two, Dumouriez and Hoche, became commanders of armies.

The sector occupied by the 35th Division was located in one of the most beautiful sections of the Vosges Mountains. In it lay many picturesque villages. Some of these had been destroyed by artillery fire. Division headquarters were first at Wesserling and later at Krüth, both villages in the valley of the Thur. There are many other towns in the same valley, each with a certain wild beauty of its own.

Krüth was the rail-head for the French troops in this sector. From this town a narrow-gauge railway and a fine automobile road lead westward, through the Col de Boussang, to Le Thillot and Remiremont. This trip is one of unexcelled beauty for the tourist. Our own sector was replete with wonderful natural features, but the exigencies of war did not permit us to fully enjoy them.

The De Galbert sub-sector, where our line began on the south, lies among the high mountains just north of the "Ballon de Guebwiller," the highest of all the Alsatian "ballons." The elevation is 1426 meters (4700 feet). These ballons will be described more in detail later. Five kilometers southeast of the Guebwiller Ballon lies that terrible mountain, Hartmanweilerskopf, where so many gallant men laid down their lives. I will explain why this came to be regarded as such an important point.

Early in August, 1914, the French drove forward into Alsace and captured the main ridge of the Vosges from Bon Homme Pass, south of Saint Dié, to Le Rheinkopf. They also secured possession of the high ridge which shoots off to the southeast from Le Rheinkopf and extends as far as Thann. The later ridge lies to the east of the famous valley of the Thur. These preliminary successes gave the French great advantages in terrestrial observation, which they maintained until the end of the war. From these heights they could keep a splendid watch on the country below them occupied by the Germans. The latter were quick to realize the handicap which they suffered, and they promptly adopted a policy of attempting to hold a number of detached hills to the east of these mountain ridges, in order that they might be able to get some counter-observation of the terrain occupied by the French to the east of the main ridge. The possession of these peaks, however, only partly overcame the disadvantages under which they labored, but they sacrificed thousands of men to hold them. As luck would have it, the terrain of our sector lying to the east of the main ridge, except the southern part, was not particularly well wooded. For this reason our movements from the main ridge to our front line, with the exception noted, had to be made under cover of darkness.

The enemy had superiority in artillery when we first went in, and it was not safe to provoke him to use it by showing ourselves. We were liable to start something which we were powerless to stop. The Germans made strenuous efforts to seize and hold the detached hills referred to above, and terrific combats were thus brought about whenever an attempt was made to dislodge them. Such places changed hands frequently in the early part of the war, and for this reason they became known as "friction-points." Hartmanweilerskopf was the most terrible of all. Thousands upon thousands of French and German soldiers laid down their lives there in fruitless struggles. The French were the heaviest losers, because the Germans, particularly in the early part of the war, not only had more guns, but guns of longer range and heavier caliber. We had a number of these friction-points along our front, but none of these had the ghastly array of casualties to its credit that Hartmanweilerskopf had.

At the north end of the De Galbert sector was Hilsenfirst, where Company "H" of the 138th Infantry, at dusk on July 6, 1918, put over our first raid. It was our opening clash with the Germans, and, measured by the scales of war, it was a great success. After destroying a number of hostile dugouts and machine-gun nests, and killing probably twenty-five of the enemy, our company returned with seven prisoners. Our loss was four killed and fourteen wounded, and we brought back all our men. Not an American, living or dead, fell into the enemy's hands. We found out what troops were opposed to us and left no information of ourselves in the enemy's hands.

From Hilsenfirst our line, closely paralleling that of the Germans, descended 1500 feet into the valley of the South Fork of the Fecht, and then rose abruptly 1000 feet to Braunkopf, another hill five kilometers north of Hilsenfirst. The valley of the South Fork is so deep that it would be called by us a cañon. It is very beautiful, and, unlike the greater part of our sector, it was well wooded. The country was so rugged that our supplies were carried to the top of the main ridge by an aerial tram and thence down the wooded mountain slopes by pack-mules to the company kitchens. After the food was cooked at the kitchens it was carried by hand to the troops in the trenches in cans, called *marmites,* each holding about five gallons. In the wintertime, when the snows were heavy, large dogs, similar to those of the Esquimaux, hauled the supplies to the kitchens on sleds and the pack-mules rested in warm stables at Krüth.

Packs of these dogs were kept carefully all summer in the valley of the Thur in order that they might be available for the winter work. As soon as the first heavy snow came the dogs were transferred to the mountains and put to work transporting rations and ammunition to the front on sleds.

From Braunkopf the line continued north, along the eastern slopes of Altmannkopf, to the Saddle (Sattel). Just east of this lay the Reichacker hill, another one of the friction-points, almost as famous, or "infamous," as was Hartmanweilerskopf. In this vicinity the terrain had once been well timbered, but the German shellfire had destroyed nearly all the trees. A few stumps, stripped of branches, alone remained standing. To get to this part of the front without showing themselves the French had constructed more than a mile of tunnel. One night a German patrol got inside the French lines, threw a lot of gas-bombs down the ventilators of this tunnel, and gassed 400 Cochin-Chinese troops who were coming in to relieve the French troops. Of these 240 died. This was a ghastly night's work.

After leaving the Saddle, the line crossed the splendid cañon of the North Fork of the Fecht. The terrain here is very wild and rugged and about half of it is timbered. A fine automobile road from Münster winds up this cañon to the Col de la Schlucht (Ravine Pass), and thence down, past Lake Longemer, to Gerardmar City and lake. This route is considered one of the most picturesque of the Vosges.

After crossing the North Fork of the Fecht our line continued on generally north, through the friction-points of the Geisberg and Le Linge, to the small stream flowing east from Le Lac Blanc. Here it joined on to that of the French troops in the Bon Homme Pass sector. The country north of the North Fork of the Fecht is more open and not as beautiful as the other parts of our sector. Here, too, a long tunnel had been constructed to conceal the movements of our troops to and from the front. Many acres of timber had been destroyed in this neighborhood by shell-fire. In the vicinity of White and Black lakes the country is very rugged, and these bodies of water resemble some of those of our Sierra Nevada. I am not a good enough geologist, however, to say that they are of glacial origin.

The road leading down to these lakes from the pass in the main ridge was bombarded daily by the Germans. My car, which was a Winton-Six, painted black, once broke down on a slope of this road visible from certain observation stations within the German lines. It took my chauffeur about five minutes to get the engine started again. To me it seemed much longer. Fortunately the German observation was defective that morning and we got started before they opened fire. This road, torn by shell-fire and fringed here and there with timber, dead or dying from the same cause, is one of the few inhospitable and forbidding spots associated with my recollections of the Vosges.

As stated before, the advantageous terrain at certain friction-points was held by the Germans, and we were forbidden to attempt to dislodge them, as eventually this would have involved a major operation, and General Foch did not want to have his plans of breaking the German lines interfered with. Had we brought on heavy fighting, it would probably have been necessary to rush considerable forces to our support. The Allied High Command was very anxious to have matters remain as quiet as possible in the Vosges in order that attention might not be diverted from the main issues of the campaign by minor disturbances, which could exercise little influence on the ultimate result. It is difficult to give the soldier the necessary training to make of him a good fighting man, but having done this, it is not less difficult to convince him, after he has been brought face to face with the enemy, that he is not to fight, even though constantly harassed by hostile artillery fire.

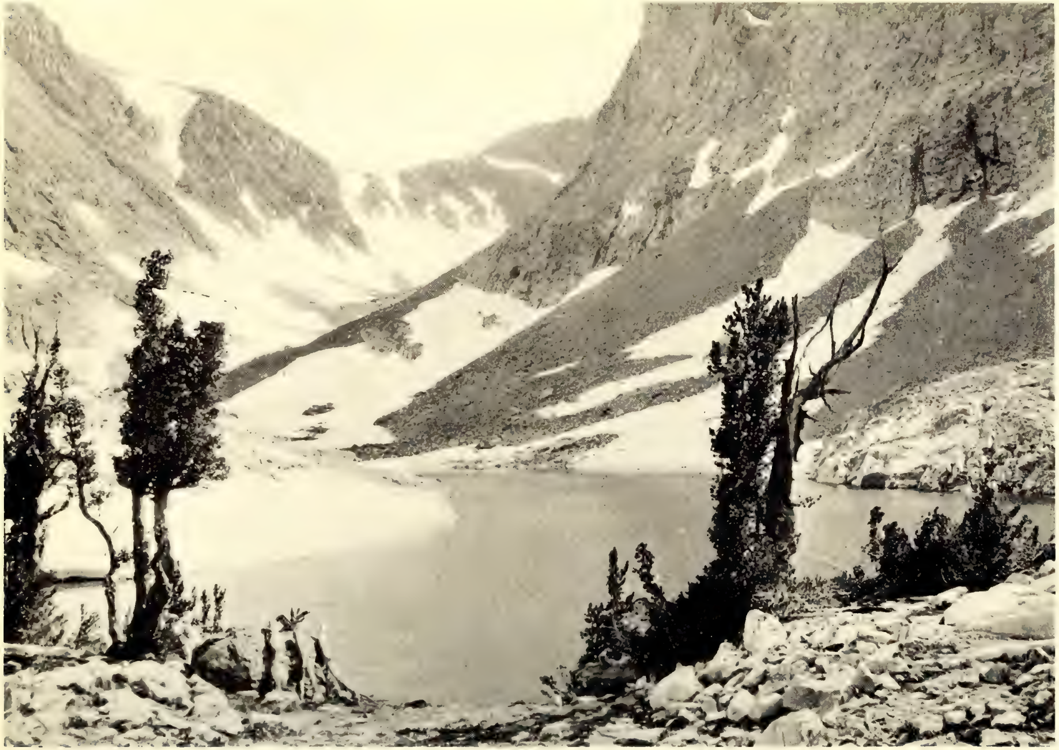
It must not be gathered from what has been said above that our life in the Vosges was without excitement. Hostile bombing-planes sometimes dropped quantities of high explosives on our headquarters and dugouts and frequently attacked our supply depots and billets behind the line. Some part of our front was nearly always under shell-fire. Raids were frequently instituted by both ourselves and the Germans to destroy parts of the opposing works and bring back prisoners. Our raid at Hilsenfirst has been described above.

This article would be incomplete without a description of the "Ballons d'Alsace," a name applied to a number of high rounded mountains of the Vosges, from which may be obtained fine views of the surrounding country. Several reasons are given for their being called "ballons," but the one having the most weight is that founded upon their resemblance, as one glances over the terrain, to the rounded "top-sides" of a group of balloons. They are not timbered on the summit, but the slopes are often covered with beech and pine. Early in August, 1918, I was summoned to Belfort to witness a demonstration of a new six-inch field mortar about to be adopted by the French. The shortest and also the best route lay to the south through Le Thillot and Saint Maurice. Five kilometers south of the latter village, the road passed within half a mile of the summit of the Ballon d'Alsace, the most famous but not the highest of all the ballons. Its elevation is over 4000 feet. Needless to say, I seized this opportunity to get what is considered one of the finest views in all Europe. I was disappointed the day I made the ascent to find the field of vision much obstructed by the hazy atmosphere. Points more than ten miles away were quite indistinct and those over twenty miles away were practically invisible. Beyond this all was but conjecture, and my map only could give a clue as to what lay outside the limit of vision. I am told that the Rhine can be seen in fine weather, and also the mountains of Switzerland. The view is one which I will not attempt to describe further. I believe that I have said enough to indicate that it is one of splendid grandeur.

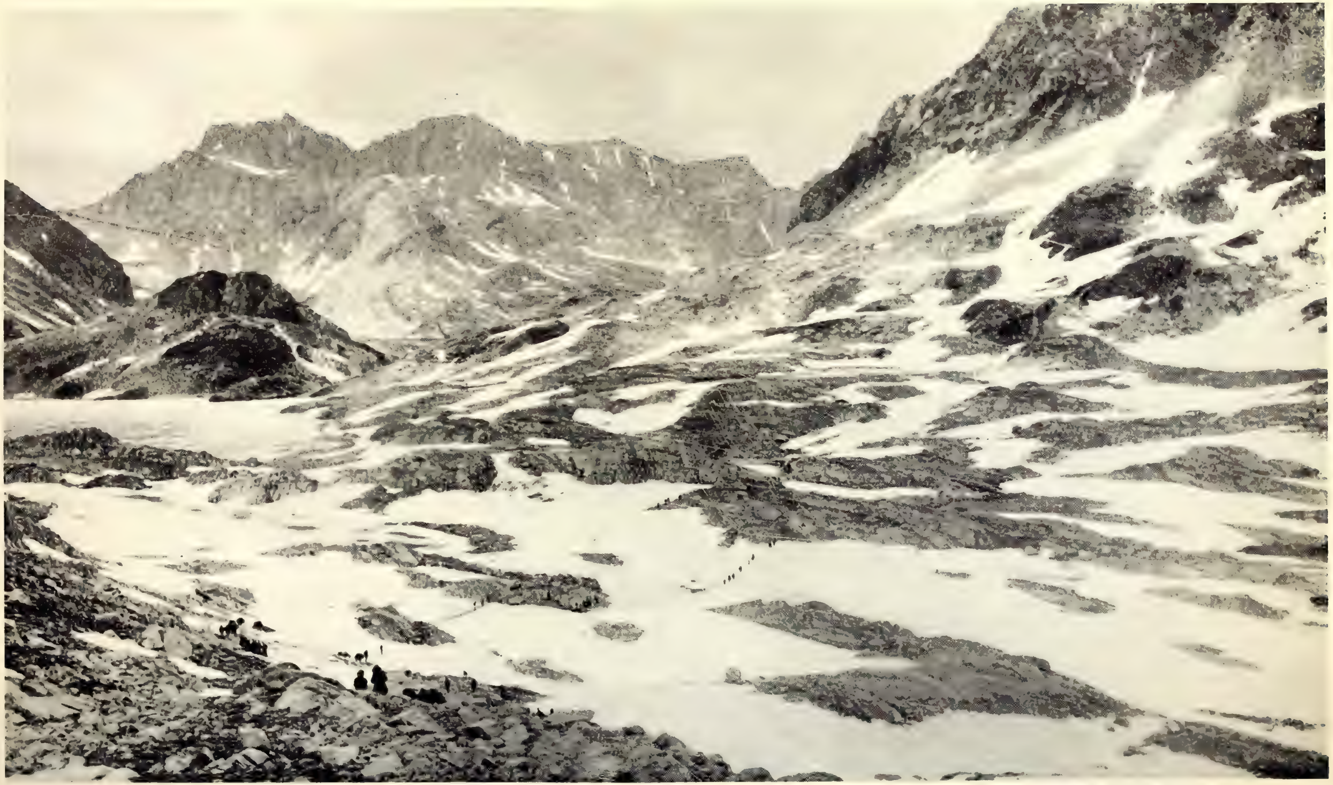
All through the Vosges Mountains are wonderful automobile roads. The tourist who does not care to do the mountains on foot can visit many points of interest in machines without much exertion. To those who hanker for the strenuous life there are hundreds of miles of footpaths, of all varieties of steepness and ruggedness, to tempt them.

It is probable that many members of the Sierra Club will visit Europe in the years to come. To all such I would say, "Do not fail to see the Vosges Mountains, for there is a beauty, a grandeur, and a series of historical associations connected with them which make them one of the most remarkable and enjoyable regions of the world for the mountain-climber."

It is not considered inappropriate to say something here of the wonderful men of the 35th Division whom I commanded in the Vosges. They did not seem to know what fear was. All that was necessary was to tell them what to do, and they would do it if it were humanly possible. The Germans early sensed this moral force and realized that they could not conquer it. Recent events have led me to fear that perhaps we are forgetting why our men went abroad and the sacrifices they made. This I attribute to the reaction following the war, and I have enough faith in our institutions to hold the opinion that this will be followed in turn by a counter-reaction which will bring us to a sane basis.



LAKE AT HEAD OF RAMBAUD CREEK, MIDDLE FORK OF KINGS RIVER
Photo by Frederick H. Morley



HEADWATERS OF THE MIDDLE FORK OF KINGS RIVER FROM MUIR PASS
Photo by Rodney L. Glisan

STUDIES IN THE SIERRA*

BY JOHN MUIR

NO. VII.—MOUNTAIN-BUILDING

❧

THIS study of mountain-building refers particularly to that portion of the range embraced between latitudes 36° 30′ and 39°. It is about 200 miles long, sixty wide, and attains an elevation along its axis of from 8000 to nearly 15,000 feet above the level of the sea. The individual mountains that are distributed over this vast area, whether the lofty and precipitous alps of the summit, the more beautiful and highly specialized domes and mounts dotted over the undulating flanks, or the huge bosses and angles projecting horizontally from the sides of cañons and valleys, have all been sculptured and brought into relief during the glacial epoch by the direct mechanical action of the ice-sheet, with the individual glaciers into which it afterward separated. Our way to a general understanding of all this has been made clear by previous studies of valley formations—studies of the physical characters of the rocks out of which the mountains under consideration have been made, and of the widely contrasted methods and quantities of glacial and post-glacial denudation.

Notwithstanding the accessibility and imposing grandeur of the summit alps, they remain almost wholly unexplored. A few nervous raids have been made among them from random points adjacent to trails, and some of the more easily accessible, such as mounts Dana, Lyell, Tyndall, and Whitney, have been ascended, while the vast wilderness of mountains in whose fastnesses the chief tributaries of the San Joaquin and Kings rivers take their rise, have been beheld and mapped from a distance, without any attempt at detail. Their echoes are never stirred even by the hunter's rifle, for there is no game to tempt either Indian or white man as far as the frosty lakes and meadows that lie at their bases, while their avalanche-swept and crevassed glaciers, their labyrinths of yawning gulfs and crumbling precipices, offer dangers that only powerful motives will induce anyone to face.

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* Reprinted from *The Overland Monthly* of January, 1875.

The view southward from the colossal summit of Mount Humphreys is indescribably sublime. Innumerable gray peaks crowd loftily into the keen azure, infinitely adorned with light and shade; lakes glow in lavish abundance around their bases; torrents whiten their denuded gorges; while many a glacier and bank of fountain *névé* leans back in their dark recesses. Awe-inspiring, however, as these vast mountain assemblies are, and incomprehensible as they may at first seem, their origin and the principal facts of their individual histories are problems easily solved by the patient student.

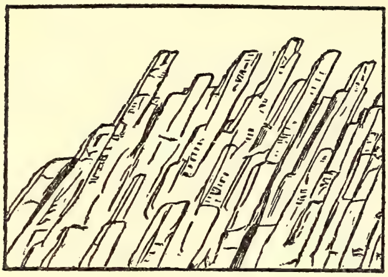
FIG. 1

Beginning with pinnacles, which are the smallest of the summit mountainets: no geologist will claim that these were formed by special upheavals, nor that the little chasms which separated them were formed by special subsidences or rivings asunder of the rock; because many of these chasms are as wide at the bottom as at the top, and scarcely exceed a foot in depth; and many may be formed artificially by simply removing a few blocks that have been loosened.

The Sierra pinnacles are from less than a foot to nearly a thousand feet in height, and in all the cases that have come under my observation their forms and dimensions have been determined, not by cataclysmic fissures, but by the gradual development of orderly joints and cleavage planes, which gave rise to leaning forms where the divisional planes are inclined, as in Figure 1, or to vertical where the planes are vertical, as in Figure 2. Magnificent crests tipped with leaning pinnacles adorn the jagged flanks of Mount Ritter, and majestic examples of vertical pinnacle architecture abound among the lofty mountain cathedrals on the heads of Kings and Kern rivers. The minarets to the south of Mount Ritter are an imposing series of partially

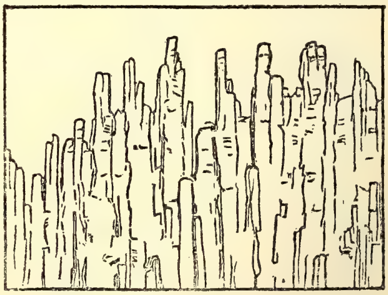
FIG. 2

separate pinnacles about 700 feet in height, set upon the main axis of the range. Glaciers are still grinding their eastern bases, illustrating in the plainest manner the blocking out of these imposing features from the solid. The formation of small peaklets that roughen the flanks of large peaks may in like manner be shown to depend, not upon any up-thrusting or down-thrusting forces, but upon the orderly erosion and transportation of the material that occupied the intervening notches and gorges.

The same arguments we have been applying to peaklets and pinnacles are found to be entirely applicable to the main mountain peaks; for careful detailed studies demonstrate that as pinnacles are separated by eroded chasms, and peaklets by notches and gorges, so the main peaks are separated by larger chasms, notches, gorges, valleys, and wide ice-womb amphitheaters. When across hollows we examine contiguous sides of mountains, we perceive that the same mechanical structure is continued across intervening spaces of every kind, showing that there has been a removal of the material that once filled them—the occurrence of large veins oftentimes rendering this portion of the argument exceedingly conclusive, as in two peaks of the Lyell group (Fig. 3), where the wide veins, N N, are continued across the valley from peak to peak. We frequently find rows of pinnacles set upon a base, the cleavage of which does not admit of pinnacle formation, and in an analogous way we find immense slate mountains, like Dana and Gibbs, resting upon a plain granite pavement, as if they had been formed elsewhere, transported and set down in their present positions, like huge erratic boulders. It appears, therefore, that the loftiest mountains as well as peaklets and pinnacles of the summit region are residual masses of the once solid wave of the whole range, and that all that would be required to unbuild and obliterate these imposing structures would simply be the filling up of the labyrinth of intervening chasms, gorges, cañons, etc., which divide them, by the restoration of rocks that have disappeared. Here the important question comes up, What has become of the missing material, not the

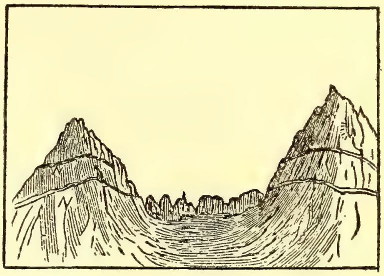

FIG. 3

millionth part of which is now to be seen? It has not been engulfed, because the bottoms of all the dividing valleys and basins are unmistakably solid. It must, therefore, have been carried away; and because we find portions of it scattered far and near in moraines, easily recognized by peculiarities of mineralogical composition, we infer that glaciers were the transporting agents. That glaciers have brought out the summit peaks from the solid with all their imposing architecture, simply by the formation of the valleys and basins in which they flowed, is a very important proposition, and well deserves careful attention.

We have already shown, in studies Nos. III and IV, that all the valleys of the region under consideration, from the minute striae and scratches of the polished surface less than a hundredth part of an inch in depth, to the Yosemitic gorges half a mile or more in depth, were all eroded by glaciers, and that post-glacial streams, whether small glancing brooklets or impetuous torrents, had not yet lived long enough to fairly make their mark, no matter how unbounded their eroding powers may be. Still, it may be conjectured that preglacial rivers furrowed the range long ere a glacier was born, and that when at length the ice-winter came on with its great skyfuls of snow, the young glaciers crept into these river channels, overflowing their banks, and deepening, widening, grooving, and polishing them without destroying their identity. For the destruction of this conjecture it is only necessary to observe that the trends of the present valleys are strictly glacial, and glacial trends are extremely different from water trends; preglacial rivers could not, therefore, have exercised any appreciable influence upon their formation.

Neither can we suppose fissures to have wielded any determining influence, there being no conceivable coincidence between the zigzag and apparently accidental trends of fissures and the exceedingly specific trends of ice-currents. The same argument holds good against primary foldings of the crust, dislocations, etc. Finally, if these valleys had been hewn or dug out by any preglacial agent whatever, traces of such agent would be visible on mountain masses which glaciers have not yet segregated; but no such traces of valley beginnings are anywhere manifest. The heads of valleys extend back into mountain masses just as far as glaciers have gone and no farther.

Granting, then, that the greater part of the erosion and transportation of the material missing from between the mountains of the summit was effected by glaciers, it yet remains to be considered what agent or agents shaped the upper portions of these mountains, which bear no traces of glacial action, and which probably were always, as they now are, above the reach of glaciers. Even here we find the glacier to be indirectly the most influential agent, constantly eroding backward, thus undermining their bases, and enabling gravity to drag down large masses, and giving greater effectiveness to the winter avalanches that sweep and furrow their sides. All the summit peaks present a crumbling, ruinous, unfinished aspect. Yet they have suffered very little change since the close of the glacial period, for if denudation had been extensively carried on, their separating pits and gorges would be choked with *débris;* but, on the contrary, we find only a mere sprinkling of post-glacial *detritus,* and that the streams could not have carried much of this away is conclusively shown by the fact that the small lake-bowls through which they flow have not been filled up.

In order that we may obtain clear conceptions concerning the methods of glacial mountain-building, we will now take up the formation of a few specially illustrative groups and peaks, without, however, entering into the detail which the importance of the subject deserves.

The Lyell group lies due east from Yosemite Valley, at a distance of about sixteen miles in a straight course. Large tributaries of the Merced, Rush, Tuolumne, and San Joaquin rivers take their rise amid its ice and snow. Its geographical importance is further augmented by its having been a center of dispersal for some of the largest and most influential of the ancient glaciers. The traveler who undertakes the ascent of Mount Lyell, the dominating mountain of the group, will readily perceive that, although its summit is 13,200 feet above the level of the sea, all that individually pertains to it is a small residual fragment less than a thousand feet high, whose existence is owing to slight advantages of physical structure and position with reference to the heads of ancient glaciers, which prevented its being eroded and carried away as rapidly as the common mountain mass circumjacent to it.

Glacier wombs are rounded in a horizontal direction at the head, for the same reason that they are at the bottom; this being the form that offers greatest resistance to glacial erosion. The semicircular outline thus determined is maintained by the glaciers in eroding their way backward into the mountain masses against which they head; and where these curved basins have been continued quite through the axis of the chain or spur, separate mountains have been produced, the degree of whose individuality depends upon the extent and variation of this erosion. Thus, let A B (Fig. 4) represent a section of a portion of the summit of a mountain chain, and C D E F G H, etc., the wombs of glaciers dead or active, then the residual masses 1 2 3 will be the so-called mountains.

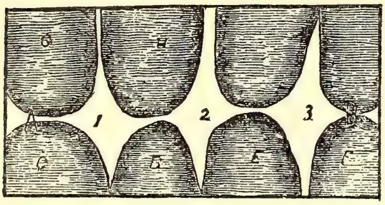

FIG. 4

It may well excite surprise that snow collected in these fountain-wombs should pass so rapidly through the *névé* condition, and begin to erode at the very head; that this, however, was the case is shown by unmistakable traces of that erosion upon the sides and heads as well as bottoms of wombs now empty. The change of climate which broke up the glacial winter would obviously favor the earlier transformation of snow into eroding ice, and thus produce the present conditions as necessary consequences.

The geological effects of shadows in prolonging the existence and in guiding and intensifying the action of portions of glaciers are manifested in moraines, lake-basins, and the difference in form and sculpture between the north and south sides of mountains and valleys. Thus, the attentive observer will perceive that the architecture of deep valleys trending in a northerly and southerly direction, as Yosemite, abounds in small towers, crests, and shallow flutings on the shadowy south side, while the sun-beaten portions of the north walls are comparatively plain. The finer sculpture of the south walls is directly owing to the action of *small shadow-glacierets*—which lingered long after the disappearance of the main glaciers that filled the valleys from wall to wall.

Every mountaineer and Indian knows that high mountains are more easily ascended on the south than on the north side. Thus, the Hoffmann spur may be ascended almost anywhere from the south on horseback, while it breaks off in sheer precipices on the north. There is not a mountain peak in the range which does not bear witness in sculpture and general form to this glacial-shadow action, which in many portions of the summit may still be observed in operation. But it is only to the effects of shadows in the segregation of mountain masses that I would now direct special attention. Figure 5 is a map of the Merced range adjacent to Yosemite Valley, with a portion of the ridge which unites it to the main axis. The arrows indicate the direction of extension of the deep glacial amphitheaters, and it will be at once seen that they all point in a southerly direction beneath the protection of shadows cast by the peaks and ridges. Again, it will be seen that because the Merced spur (S P) trends in a northerly direction, its western slopes are in shadow in the forenoon, its eastern in the afternoon, consequently it has a series of glacial wombs on *both* sides; but because the ridge (P G) trends in an easterly direction, its southern slopes are scarcely at all in shadow, consequently deep glacial wombs occur *only* upon the *northerly* slopes. Still further, because the Merced spur (S P) trends several degrees west of north, its eastern slopes are longer in shadow than the western, consequently the ice-wombs of the former are deeper and

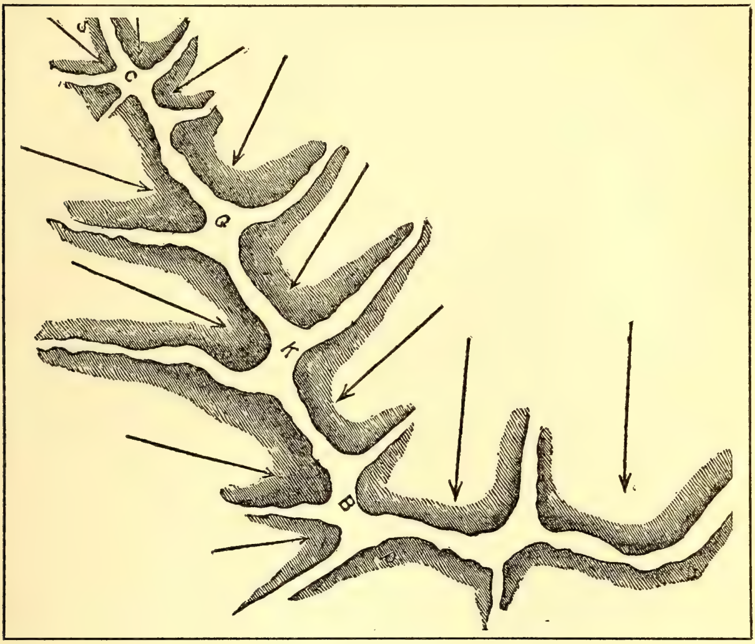

FIG. 5

their head-walls are sheerer; and in general, because the main axis of the Sierra has a northwesterly direction, the summit peaks are more precipitous on the eastern than on the western sides.

In the case of ice-wombs on the north side of a mountain equally shadowed on the east and west, it will be found that such wombs, other conditions being equal, curve back in a direction a little to the west of south, because forenoon sunshine is not so strong as afternoon sunshine. The same admirable obedience to shadows* is conspicuous in all parts of the summits of the range. Now, *glaciers are the only eroders that are thus governed by shadows.*

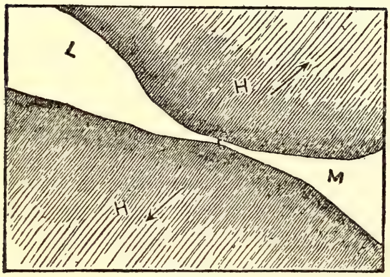

Fig. 6

Figure 6 is a section illustrating the mode in which the heads (H H) of tributaries of the Tuolumne and Merced glaciers have eroded and segregated the mountain mass (L M) into two mountains—namely, Lyell and McClure—by moving backward until they met at C, leaving only the thin crest as it now exists.

Mount Ritter lies a few miles to the south of Lyell, and is readily accessible to good mountaineers by way of the Mono plains. The student of mountain-building will find it a kind of text-book, abounding in wonderfully clear and beautiful illustrations of the principles of Sierra architecture we have been studying. Upon the north flank a small active glacier may still be seen at work blocking out and separating a peak from the main mass, and its whole surface is covered with clearly cut inscriptions of the frost, the storm-wind, and the avalanche. Though not the very loftiest, Ritter is to me far the noblest mountain of the chain. All its neighbors stand well back, enabling it to give full expression to its commanding individuality; while living glaciers, rushing torrents, bright-eyed lakes, gentian meadows; flecks of lily and anemone, shaggy thickets and groves, and polleny zones of sun-filled *compositae,* combine to irradiate its massive features, and make it as beautiful as noble.

The Merced spur (see Fig. 5), lying about ten miles to the southeast of Yosemite Valley and about the same distance from the main axis, presents a finely individualized range of peaks, 11,500 to 12,000 feet high, hewn from the solid. The authors of this beautiful piece of sculpture were two series of tributaries belonging to the glaciers of the Nevada and Illilouette.

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* For further illustrations of the above observations on shadows, I would refer the reader to Gardiner and Hoffman's map of the Sierra adjacent to Yosemite Valley, or, still better, to the mountains themselves.

The truly magnificent group of nameless granite mountains stretching in a broad swath from the base of Mount Humphreys forty miles southward, is far the largest and loftiest of the range. But when we leisurely penetrate its wild recesses, we speedily perceive that, although abounding in peaks 14,000 feet high, these, individually considered, are mere pyramids, 1000 to 2000 feet in height, crowded together upon a common base, and united by jagged columns that swoop in irregular curves from shoulder to shoulder. That all this imposing multitude of mountains was chiseled from one grand preglacial mass is everywhere proclaimed in terms understandable by mere children.

Mount Whitney lies a few miles to the south of this group, and is undoubtedly the highest peak of the chain, but, geologically or even scenically considered, it possesses no special importance. When beheld either from the north or south, it presents the form of a helmet, or, more exactly, that of the Scotch cap called the "Glengarry." The flattish summit curves gently toward the valley of the Kern on the west, but falls abruptly toward Owens River Valley on the east, in a sheer precipice near 2000 feet deep. Its north and southeast sides are scarcely less precipitous, but these gradually yield to accessible slopes, round from southwest to northwest. Although highest of all the peaks, Mount Whitney is far surpassed in colossal grandeur and general impressiveness of physiognomy, not only by Mount Ritter, but by mounts Dana, Humphreys, Emerson, and many others that are nameless. A few meadowless lakes shine around its base, but it possesses no glaciers, and, toward the end of summer, very litle snow on its north side, and none at all on the south. Viewed from Owens Valley, in the vicinity of Lone Pine, it appears as one of many minute peaklets that adorn the massive uplift of the range like a cornice. Toward the close of the glacial epoch, the gray porphyritic summit of what is now Mount Whitney peered a few feet above a zone of *névé* that fed glaciers which descended into the valleys of the Owens and Kern rivers. These, eroding gradually deeper, brought all that specially belongs to Mount Whitney into relief. Instead of a vast upheaval, it is merely a remnant of the common mass of the range, which, from relative conditions of structure and position, has suffered a little less degradation than the portions circumjacent to it.

Regarded as measures of mountain-building forces, the results of erosion are negative rather than positive, expressing more directly what has *not* been done than what *has* been done. The difference between the peaks and the passes is not that the former are elevations, the latter depressions; both are depressions, differing only in degree. The abasement of the peaks having been effected at a slower rate, they were, of course, left behind as elevations.

The transition from the spiky, angular summit mountains to those of the flanks with their smoothly undulated outlines is exceedingly well marked; weak towers, pinnacles, and crumbling, jagged crests at once disappear,* leaving only hard, knotty domes and ridge-waves as geological illustrations, on the grandest scale, of the survival of the strongest.

Figure 7 illustrates, by a section, the general cause of the angularity of summit mountains, and curvedness of those of the flanks; the former having been *down*-flowed, the latter *over*-flowed. As we descend from the alpine summits on the smooth pathways of the ancient ice-currents, noting where they have successively denuded the various rocks—first the slates, then the slaty-structured granites, then the curved granites—we detect a constant growth of specialization and ascent into higher forms. Angular masses, cut by cleavage planes begin to be comprehended in flowing curves. These masses, in turn, become more highly organized, giving rise by the most gradual approaches to that magnificent dome scenery for which the Sierra is unrivaled. In the more strongly specialized granite regions,

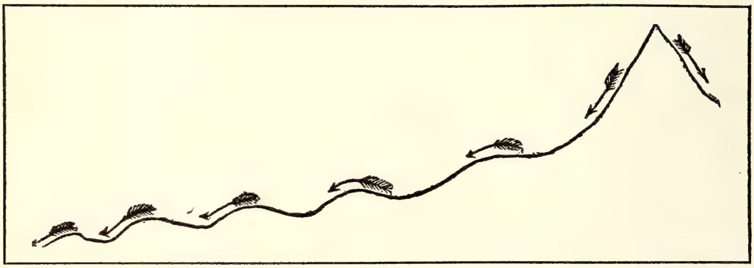

FIG. 7

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* For exceptions to this general law, real or apparent, see Study No. I.

the features, and, indeed, the very existence, of overflowed mountains are in great part due neither to ice, water, nor any eroding agent whatsoever, but to building forces—crystalline, perhaps—which put them together and bestowed all that is more special in their architectural physiognomy, while they yet lay buried in the common fountain mass of the range.

The same silent and invisible mountain-builders performed a considerable amount of work upon the down-flowed mountains of the summit, but these were so weakly put together that the heavy hand of the glacier shaped and molded, without yielding much compliance to their undeveloped forms. Had the unsculptured mass of the range been everyway homogeneous, glacial denudation would still have produced summit mountains, differing not essentially from those we now find, but the rich profusion of flank mountains and mountainets, so marvelously individualized, would have had no existence, as the whole surface would evidently have been planed down into barren uniformity.

Thus the want of individuality which we have been observing among the summit mountains is obviously due to the comparatively uniform structure and erodibility of the rocks out of which they have been developed; their forms in consequence being greatly dependent upon the developing glaciers; whereas the strongly structured and specialized flank mountains, while accepting the ice-currents as developers, still defended themselves from their destructive and form-bestowing effects.

The wonderful adaptability of ice to the development of buried mountains, possessing so wide a range of form and magnitude, seems as perfect as if the result of direct plan and forethought. Granite crystallizes into landscapes; snow crystallizes above them to bring their beauty to the light. The grain of no mountain oak is more gnarled and interfolded than that of Sierra granite, and the ice-sheet of the glacial period is the only universal mountain eroder that works with reference to the grain. Here it smooths a pavement by slipping flatly over it, removing inequalities like a carpenter's plane; again it *makes* inequalities, gliding moldingly over and around knotty dome-clusters, groping out every weak spot, sparing the strong, crushing the feeble, and following lines of predestined beauty obediently as the wind.

Rocks are brought into horizontal relief on the sides of valleys wherever superior strength of structure or advantageousness of position admits of such development, just as they are elsewhere in a vertical direction. Some of these projections are of a magnitude that well deserves the name of *horizontal mountain.* That the variability of resistance of the rocks themselves accounts for the variety of these horizontal features is shown by the prevalence of this law. *Where the uniformity of glacial pressure has not been disturbed by the entrance of tributaries, we find that where valleys are narrowest their walls are strongest; where widest, weakest.*

In the case of valleys with sloping walls, their salient features will be mostly developed in an oblique direction; but neither horizontal nor oblique mountainets or mountains can ever reach as great dimensions as the vertical, because the retreating curves formed in weaker portions of valley walls are less eroded the deeper they become, on account of receiving less and less pressure, while the alternating salient curves are more heavily pressed and eroded the farther they project into the past-squeezing glacier; thus tending to check irregularity of surface beyond a certain limit, which limit is measured by the resistance offered by the rocks to the glacial energy brought to bear upon them. So intense is this energy in the case of large steeply inclined glaciers, that many salient bosses are broken off on the lower or down-stream side with a fracture like that produced by blasting. These fractures occur in all deep Yosemitic cañons, forming the highest expressions of the intensity of glacial force I have observed.

The same tendency toward maintaining evenness of surface obtains to some extent in vertical erosion also; as when hard masses rise abruptly from a comparatively level area exposed to the full sweep of the overpassing current. If vertical cleavage be developed in such rocks, *moutonnéed* forms will be produced with a split face turned away from the direction of the flow, as shown in Figure 8, Study No. 1. These forms, measuring from a few inches to a thousand feet or more in height, abound in hard granitic regions. If no cleavage be developed, then long ovals will be formed, with their greater diameters extended in the direction of the current. The general tendency, however, in vertical erosion is to make the valleys deeper and ridges relatively higher, the ice-currents being constantly attracted to the valleys, causing erosion to go on at an accelerated rate, and drawn away from the resisting ridges until they emerge from the ice-sheet and cease to be eroded; the law here applicable being, "to him that hath shall be given."

Thus it appears that, no matter how the preglacial mass of the range came into existence, all the separate mountains distributed over its surface between latitude 36° 30′ and 39°, whether the lofty alps of the summit, or richly sculptured dome-clusters of the flank, or the burnished bosses and mountainets projecting from the sides of valleys—all owe their development to the ice-sheet of the great winter and the separate glaciers into which it afterward separated. In all this sublime fulfillment there was no upbuilding, but a universal razing and dismantling, and of this every mountain and valley is the record and monument.

TRAVEL

To travel is to do, not only to see. To travel best is to be of the sportsmen of the road. To take a chance and win; to feel the glow of muscles too long unused; to sleep on the ground at night and find it soft; to eat, not because it is time to eat, but because one's body is clamoring for food; to drink where every stream and river is pure and cold; to get close to the earth and see the stars—this is travel.

MARY ROBERTS RINEHART

SIERRA CLUB

Founded 1892

402 Mills Building, San Francisco, California
Annual Dues: $3.00 (first year, $5.00)

THE PURPOSES OF THE CLUB ARE:

To explore, enjoy, and render accessible the mountain regions of the Pacific Coast; to publish authentic information concerning them; to enlist the support and co-operation of the people and the Government in preserving the forests and other natural features of the Sierra Nevada.

◆

John Muir, President 1892 to 1914

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SIERRA CLUB BULLETIN

Published annually for the members

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EDITORIALS

Hands off the Parks! During the past months we have faced the most critical situation that has ever arisen in the history of our national parks. First special interests made a determined attempt, with the so-called Smith Bill, to invade the Yellowstone National Park and submerge eight thousand acres in the beautiful Falls River basin. By clever handling, the bill was railroaded through the Senate and was on the unanimous consent calendar of the House before the friends of the parks got wind of the situation and checked its career by a hearing before the House Rules Committee. It is in good part due to the vigorous and instant response of a large proportion of our members who sent their protests to Congress that this bill may now be regarded as dead.

An even more dangerous project to dam Yellowstone Lake for the benefit of local irrigation and power interests in Montana is still before Congress in a new bill introduced by Senator Walsh of Montana. At a public hearing afforded its promoters last summer by Secretary Payne it was freely admitted that their reason for desiring to place the dam in the park instead of outside, where a much greater volume of water could be impounded, is to save themselves the expense of buying a dam-site. It was apparently something of a shock for them to be asked by Secretary Payne whether they had ever thought of the fact that national parks had been established for all the people of the United States, and for posterity, and not for the exclusive benefit of residents in the Yellowstone Valley. It is a disheartening and disquieting fact that selfish groups who wish to invade the parks for private ends can always find politicians ready to assist them. The only thing that makes an impression upon such persons is a united and aggressive public sentiment demanding that the parks be preserved exactly as nature made them, and that no commercial interest be permitted to enter them for any purpose whatsoever. This demand was made unequivocally and unanimously at the recent National Conference on Parks held at Des Moines.

Interested parties are endeavoring to propagate the false impression that most commercial opportunities for water power are now locked up in the parks, and that it is necessary to open them up for exploitation. The truth is that our parks constitute only *four per cent* of the national forests, and less than two per cent of the remaining public lands, and that more than ninety per cent of the water-power opportunities in these public land areas *remain undeveloped.* It is not need, but greed, that turns the eyes of park invaders, municipal as well as others, toward the waters of our mountain sanctuaries, for there they hope to get free from a complaisant government what elsewhere they would have honestly to pay for. In any case, the water does not remain in the parks, but can be utilized after it comes out. According to one of the greatest irrigation experts in the country, the storage opportunities outside are so great and so undeveloped that they are not likely to be exhausted in any future that can now be foreseen. W. F. B.

∴

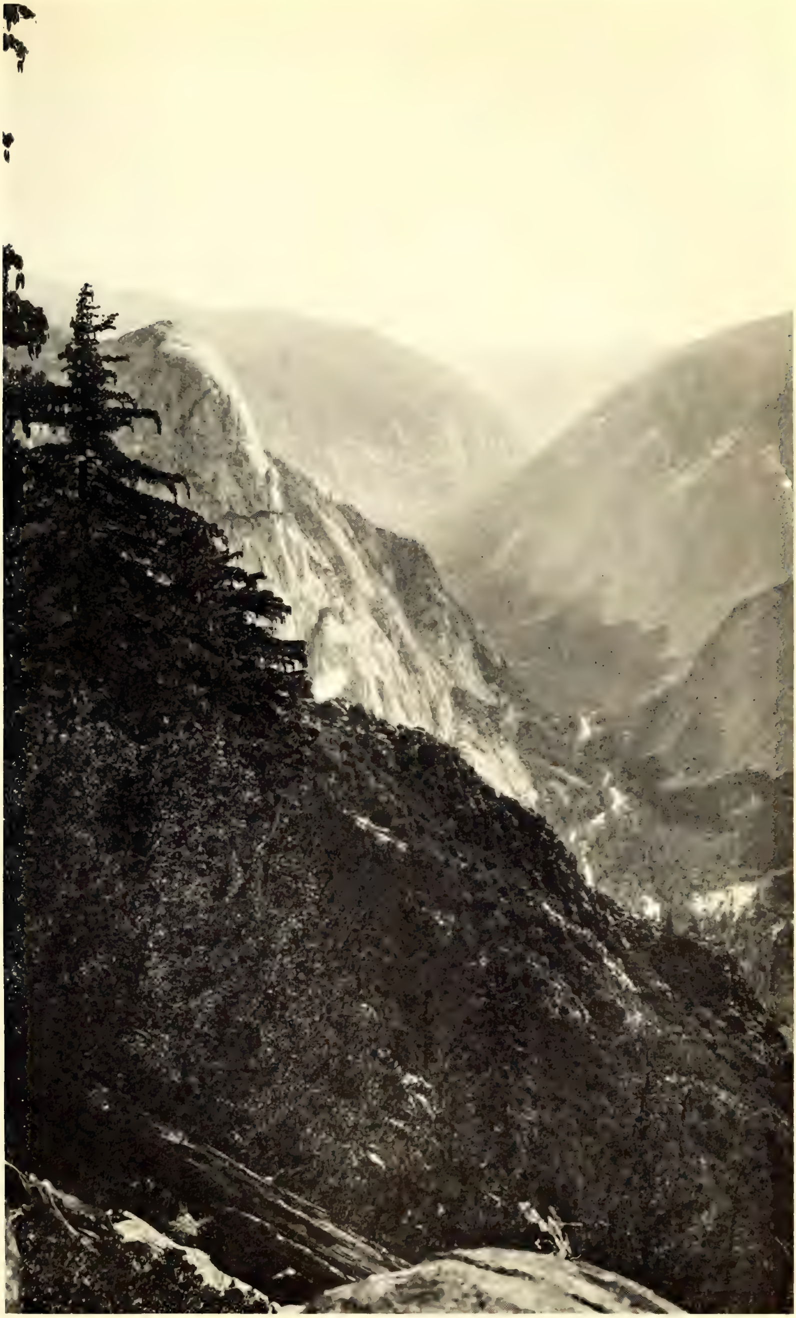
CONFERENCE ON NATIONAL PARKS The National Conference on Parks, held at Des Moines in January, was remarkable for its size, its enthusiasm, and its progressiveness. The difference in purpose between our national parks and our national forests was brought out at various points in the conference, and there was a very evident determination to present a united front against recent tendencies to throw our national parks open to commercialization. The various movements to establish state parks came in for a good deal of attention and encouragement. It was a fitting recognition of the firm and patriotic stand taken by Secretary John Barton Payne in favor of park protection that he was made chairman of a national committee charged with the task of arranging for another conference next year. W. F. B.

∴

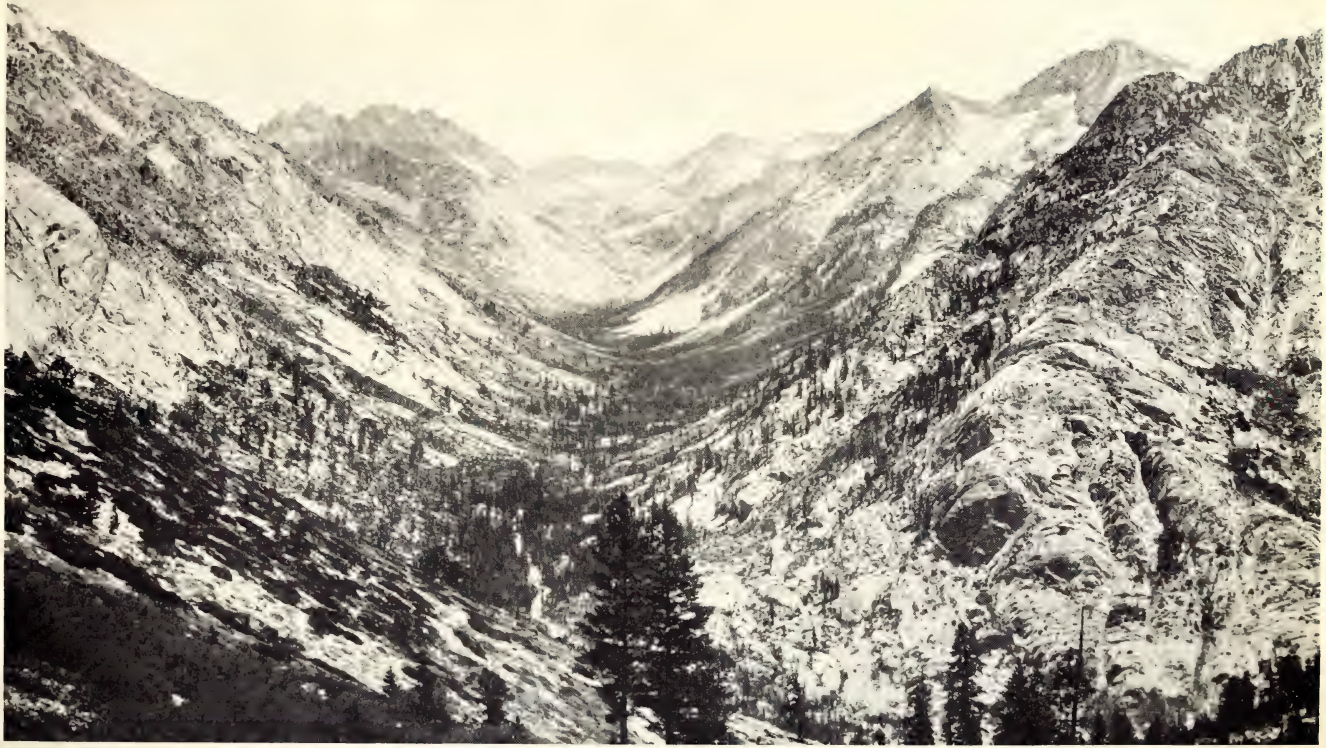
GIFTS AND BEQUESTS TO THE CLUB A public-spirited member of the club recently came to the conclusion that if she gave certain money to the club during her lifetime, instead of bequeathing it to the club in her will, as she had originally intended, she would be doing a great deal more good with this amount of money, and it would immediately begin to accomplish the results which she desired. We trust that our members will give serious thought to this plan. There are many praiseworthy objects which can be accomplished or furthered by the judicious use of funds, even though small in amount, but which work the club now has to forego because of financial limitations. Material wealth accumulated during our lifetime ceases to have any value for us after death. While it is eminently desirable that we should all provide for those who are dependent upon us, and who need such provision, yet there is a proper limit to this form of disposition, and there is nothing more praiseworthy than to devote some portion of one's accumulated wealth to objects which will perpetually promote public welfare.

There are few things more vital to the national welfare than to preserve inviolate for all time some of our wonder-spots in their primeval condition as examples of "pure wildness," to use a favorite expression of John Muir's, for the enjoyment and uplift of the generations to come.

This important work can be furthered by financial aid. W. E. C.



TEHIPITE DOME AND MIDDLE FORK OF KINGS RIVER
Photo by Francis P. Farquhar



LOOKING UP PALISADE CREEK FROM RAMBAUD CREEK
Middle Palisade at the left
Photo by E. W. Harnden

REPORTS OF COMMITTEES

TREASURER'S REPORT

To the Directors of the Sierra Club:

The following report on the finances of the club for the year ended December 31, 1920, is respectfully submitted.

JOSEPH N. LE CONTE, Treasurer

GENERAL FUND

Received:

Dues from 663 new members, at $5 each	$ 3,315.00
Dues from 1445 old members, at $3 each	4,335.00
Total dues received	$ 7,650.00
Advertising in SIERRA CLUB BULLETIN	535.00
Copies of BULLETIN sold	49.40
Pins and song-books sold	44.85
Maps, etc., sold at Le Conte Lodge	17.27
Sublease of office-room in Mills Building	76.00
Interest on savings-bank accounts	99.64
Income accrued on War Savings Stamps	24.00
Miscellaneous small receipts	17.55
Total received	$ 8,513.71

Expended:

Office rent, Mills Building	$ 850.00
Salary of Assistant Secretary	1,030.00
Total cost of 1920 BULLETIN, printing and cuts	2,136.50
Distribution of BULLETIN, postage and mailing	172.52
Cost of securing advertisements for BULLETIN	140.00
General office expenses, postage and stationery	552.14
Telephone and telegrams	170.71
Proportion of dues turned over to Southern California Section	571.50
Le Conte Lodge and Yosemite Auditorium	380.96
Expenses for Save the Parks movement	225.00
Redemption of certificate, Soda Springs property	200.00
Additions to library and binding	120.90
Traveling expenses of Southern California directors to meetings	82.50
Local walks, printing and postage	96.63
Taxes on Soda Springs property	60.04
Meetings and entertainments	21.33
Dues to other clubs	46.90
Purchase of club pins for resale	52.04
Miscellaneous small expenses	35.25
Total expended	$ 6,944.92

Summary:

Total received	$ 8,513.71
Balance January 1, 1920	2,757.79
Total	$11,271.50
Total expended	6,944.92
Balance December 31, 1920	$ 4,326.58

On hand:

First National Bank, cash	$ 517.42
Mercantile Trust Company, Savings Union Branch, cash	756.05
Security Savings Bank, cash	2,144.11
War Savings Stamps	884.00
Cash in office	25.00
Total	$ 4,326.58

PERMANENT FUND

Received:

Four new life memberships, at $50 each	$ 200.00
Interest on savings-bank account	12.78
Interest on Liberty Bonds	85.00
Total received	$ 297.78
Balance January 1, 1920	2,255.12
Balance December 31, 1920	$ 2,552.90

On hand:

Liberty Bonds: Third 4¼%, par value	$ 1,000.00
Liberty Bonds: Fourth 4¼%, par value	1,000.00
Security Savings Bank, cash	467.90
First National Bank, cash	85.00
Total	$ 2,552.90

ROBERT S. GILLETTE FUND

On hand:

Victory Bonds: Fifth 4¾%, par value	$ 1,000.00

SPECIAL MEMORIAL LODGE FUND

Received:

Donation of securities at par value of	$ 2,000.00

On hand:

Securities at par value of	$ 2,000.00

MEMORIAL LODGE CURRENT FUND

Received:

Donations	$ 15.00
Interest on Gillette and Special Memorial Lodge Funds	93.75
Total received	$ 108.75

On hand:

Wells Fargo Nevada National Bank, cash	$ 108.75

SECRETARY'S REPORT

To the Members of the Sierra Club:

The past year has been one of the most active in the club's existence. The club has had a greater opportunity for genuine service than for many years past. The inclusion of national parks in the Federal Water Power Bill rendered it necessary to start an energetic campaign to have them excluded without delay from the destructive commercialization to which they were thrown open. Already many filings have been made under this recent legislation, certain of them in the immediate vicinity of the Yosemite Valley, which would seriously affect some of the most beautiful falls of the park. These are only a prophecy of what will come if the parks are left unprotected from similar assaults. The bill pending in Congress providing for the damming of the Yellowstone Lake represents an attempted invasion of the Yellowstone National Park. It is quite evident that a concerted attempt is being made to break down the safeguards which have heretofore surrounded our national parks, and it is vitally important for all of our members to work more earnestly than ever to stop these threatened invasions before it is too late. The creation of the Greater Sequoia (or Roosevelt) National Park is also important legislation which the club is fostering and which is now pending before Congress.

During the year a member, who does not wish his name disclosed, has presented the club with bonds representing $2000, accompanied by the suggestion that the income be used for the care of the Parsons and Le Conte lodges. This is an admirable way of helping in the work of the club and placing it on a firmer foundation.

Owing to the very active campaign for new members conducted during the year, the membership now numbers 2257. There were 663 members added during the year and 314 lost through death and resignations. This increase in membership is most encouraging as an indication that the club is approaching more normal times and has safely bridged the unsettled period resulting from the war. From every side, both from editorial comment in newspapers and from private expressions of opinion, it becomes increasingly evident that the Sierra Club is held in high esteem because of its unselfish and fearless stand on all questions which come within its sphere of activity.

WILLIAM E. COLBY, Secretary

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REPORT OF 1920 OUTING

The outing held by the Sierra Club during July, 1920, was the most ambitious and, at the same time, the most successful the club has ever undertaken. This particular trip had been planned to take place in 1917, but the entry of the United States into the war prevented. The club started from Huntington Lake, crossing the lake on barges and camping at the upper end for two or three days. The party next visited the Lower Hot Springs on the South Fork of the San Joaquin, moving up the river to the very attractive Paradise (Jackass) Meadows, where another short stay was made. Moving still farther up the river, the club camped for one night near the junction of Evolution Creek. The following day camp was made in the upper end of Evolution Valley just below The Hermit and Evolution Basin. From this wonderful spot side-trips were taken into the great array of near-by peaks. Two parties made the first ascent of Mount Fiske. It was quite an undertaking to transport the immense tonnage of provisions and equipment across Muir Pass (12,059 ft.), and, in spite of the light snowfall which prevailed through most of the Sierra, there was still several miles of snow to cross in the vicinity of the pass. The pack-train took over an advance load of provisions, which was cached on the farther side of the pass amid a snow- and hail-storm accompanied by thunder and lightning. The entire party made the trip across without great difficulty and camped that night in Little Pete Meadow with the majestic uplift of Langille Peak towering on the opposite side of the river. Moving on down the Middle Fork of the Kings River, the most permanent camp of the trip was made immediately at the junction of Palisade Creek with the main river. During the several days' stay at this point side-trips were again taken into the surrounding mountains, this camp being in all probability the most strategic for real mountaineering in the entire Sierra. Climbs were made of the North Palisade and other peaks in the vicinity. Continuing on down the Middle Fork, a one-night's stop was made at Simpson Meadows, and then two days were spent in Tehipite Valley. Tehipite Dome stood out in the moonlight of these nights like a monument of alabaster, its beauty seeming almost ethereal.

On the return to Huntington Lake stops were made at Gnat, Maxon, and Helms meadows. In ruggedness of country traversed, in difficulty of transportation, and in grandeur of scenery, the 1920 outing will long remain as a record trip.

Many unforeseen difficulties arose, due to the snow conditions in the passes of the Sierra, which made the pack-train several days late in arriving at the point of departure, and a strike on the part of some of the packers also added to the difficulty of the management. The party responded so generously to the various emergencies and helped in so many ways that it would be impossible to enumerate all those to whom the management owes the deepest obligation.

The cold and treacherous waters of one of the rivers came near resulting in a fatality, but the cool and courageous rescue accomplished by some of the women is indicative of the experience and resourcefulness of the members who have taken many of these high-mountain trips. The emergency created by the pack-train difficulties, as well as the sudden advance in the cost of certain provisions after the outing estimate had been made, resulted in the necessity of calling for a small additional assessment, the first one in sixteen years. The committee regretted that it was necessary, and it would seem as though, with the experience of the past on other outings, it can be avoided in the future.

The outing for 1921 will be taken from Soda Springs in Tuolumne Meadows as a base, which will be reached via Yosemite Valley. The main feature of the trip will be an excursion into the northern portion of the Yosemite National Park, which has not been visited by the club for a number of years, and the attractive features of which are worth visiting again and again. New country which the club has not heretofore reached on its outings will also be included in the itinerary.

The attempt will also be made, for those who desire to do so, to study the birds, animals, trees, flowers, and geological features under competent supervision. Those who are interested in taking this trip, which will be made during July, 1921, should signify their intention in writing at as early a date as possible in order to help the committee in making the necessary arrangements.

OUTING COMMITTEE, Per WM. E. COLBY, Chairman

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LE CONTE AND PARSONS MEMORIAL LODGES

The Le Conte Lodge opened to the public on May 15, 1921, and closed on August 20th. Tourist travel to the Yosemite this season was greater than during any previous year, and the number of visitors to the Lodge was correspondingly large—nearly five thousand names appeared on the register for the year.

The library, herbarium, and photographs were in constant use by the visitors, and all commended the work and spirit of the Sierra Club. Several new books were added to the library—e. g., "California Wild-Flower Songs" and "The Children's Lark," both presented by the author, Leila France McDermott; Dr. Badè presented his interesting article, "John Muir in the Yosemite"; and an album of views of the Half Dome cable stairway was given by Mr. M. H. McAllister. The library always welcomes any donation of books, maps, or photographs, relating to science, travel, natural history, etc., that would be of interest.

The real necessities for the building constitute the following: Two doors for the side rooms; new lock and repairs on front door; repairs on roof, and closing of numerous cracks and openings under eaves; complete stoppage of all cracks and holes in woodwork in interior which admit wood-rats; improved lighting and wiring. The planting of trees and shrubs around the building would greatly improve its general appearance.

A new fire-hose was purchased by the club, and is quite satisfactory, the normal water-pressure being sufficient to cast a stream over the apex of the roof. The fire menace is therefore lessened considerably.

The cable stairway up Half Dome, donated to the park by Mr. McAllister, proved very satisfactory, and enabled thousands to reach the summit of the Dome, which heretofore had been a very hazardous undertaking. Early in the season snow avalanches carried away nearly one hundred feet of the iron supports, yet the cable itself remained intact, resting on the surface of the Dome, and many made the ascent while this condition prevailed. Later the Park Service repaired the stairway, and it is now in first-class order. From experience, it is advisable to remove the supports at the opening of the winter season, for snow avalanches are inevitable, and injury to the cable is almost a foregone conclusion. A new flag was hoisted on the overhanging rock of the Dome, and it will be necessary to renew it every spring.

Several hundred pounds of rock salt was sent by Mr. M. Hall McAllister, to be used for deer-licks, 150 pounds being placed in a meadow in the Little Yosemite, and during the coming season I shall try to set out the remainder in various spots around the valley.

An outdoor log auditorium about four hundred feet east of the Le Conte Lodge was constructed jointly by the Sierra Club and the National Park Service. It is equipped with water hydrant, electric light, and canvas seat-backs, which may be stored during the winter.

A series of six lectures was held in Yosemite this year. Those requiring lantern-slides were held in the Government pavilion at the Yosemite Village; the others in the new Le Conte Lodge auditorium. They were very satisfactory and well attended.

PARSONS MEMORIAL LODGE

This year there was no custodian at Parsons Memorial Lodge in Tuolumne Meadows, and accordingly the building and log cabin adjacent were broken into and many articles belonging to the club were stolen. Both buildings were misused by travelers through the Meadows and left by them in a very disorderly condition. Upon several visits to the Meadows I closed the lodge as securely as possible, but on following trips I found the door and windows had been forced open and the interior in general confusion. The poles intended to support the roof against winter snows had been removed and cut up. It was necessary therefore to set up new supports as protection during the coming winter, and Mr. F. C. Holman (who has done much for the Sierra Club this season, as in the past) and I cut poles of the proper size from large logs lying in the lodge and set them up, securely wedging them. A custodian for Parsons Lodge is a necessity, and if the club does not install one in future seasons, the same conditions will prevail, as the traveling public apparently have no regard for public property.

The Soda Springs at Tuolumne Meadows were frequented by great numbers of tourists during the season. I would suggest that some improvements be made at the springs, as the present method of baling the water out from the springs is very unsanitary.

Respectfully submitted,

ANSELL E. ADAMS,
Custodian Le Conte Lodge

NOTES AND CORRESPONDENCE

CLIMBING MOUNT HUMPHREYS FROM BISHOP

BY C. H. RHUDY

For a little over twelve years I lived in the Owens Valley, practically at the base of Mount Humphreys, before an opportunity presented itself of carrying out a long-cherished desire to look at the world from the top of the noble old mountain. My ambition was realized on July 18, 1920, when with two fellow engineers, LeRoy C. Bogue and Joseph L. Findlay, we added our names to the Sierra Club register found on top of the mountain, making a total of nine signatures up to that date.*

We were fortunate in being able to make the start for the summit from a construction camp, at that time being operated by the writer for the Southern Sierras Power Company, located only three miles horizontally and a little over one mile vertically from the top of the mountain. In this connection, I might add that the camp-site was reached by a Ford car, specially equipped, and, so far as my information goes, no other car has been this close to the summit of Mount Humphreys.

We were on our way at 6:00 A.M. We followed the trail to its end at the McGee Creek Reservoir, being the higher of the two small lakes shown on the Mount Goddard topographic sheet on the headwaters of McGee Creek.

We went around the northwest side of this lake about halfway and then turned almost due west up the mountain-side, skirting to the south and west of a prominent ridge projecting from the main range; we finally reached the crest of this ridge, which we traversed till we came out on top of the saddle on a wide flat about one mile northwesterly from Humphreys. Our course then zigzagged along the main crest, now on the east side, then on the west side, around the bases of the jagged sawteeth, any of which would have been fine sport in climbing if we hadn't been in search of bigger game.

After perhaps an hour of winding back and forth between the pinnacles, and this time scaling along the east side of one of them, we came suddenly face to face with the real thing. There it was, a towering spire five or six hundred feet high. The northwest side of the main peak proper is indented, or trough-shaped, for the first three hundred feet, and gradually becomes steeper and narrower till it pinches out entirely, and ends up against an almost vertical wall. Viewing the thing from a distance of probably eight hundred feet, it simply looked impossible to climb it; but remembering that others had claimed to have reached the top, we knew that if they had we could do it too; so we started up the trough. The going was good for the first three hundred feet, and then the crevasse played out, and it seemed for a time that we had reached the "end of the trail." After looking around for quite a little while, we discovered a slight ledge to our right which seemed to hold out possibilities. This is no doubt the same ledge that Mr. Bunn mentions, for I do not believe there is another possible chance to climb the peak from the northwest side except to use this ledge. Very carefully we worked our way along for a distance of some twenty or thirty feet, and it brought us out right on the ridge of the spire. The ridge was broken and jagged, and furnished in most places good handholds. However, there was one place in particular where the traction furnished by hands and feet seemed inadequate, and in that case the stomach was brought into play also. Anyone who has been in these ticklish places knows what I mean, and, I dare say, in similar circumstances has used the same method.

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* See Editor's Note at end of article.

The last two hundred and fifty feet of the climb is truly a scaly proposition, the route of ascent here being along the comb of a ridge. About fifty feet from the top the comb flattens out, and here a huge boulder is carefully balanced along the crest. At first the climber thinks he can work his way around this boulder, but after he has spent some time in trying to do so, and has incidentally observed the delicately balanced position of the rock, he finds that the only course open leads directly over the top of this stone and he fully expects it to turn over when he steps on top of it.

After passing this place, where the hair tends to assume a vertical position, the top is reached in two minutes. We found the Sierra Club register in plain view on a flat rock. Our names were added to the list of six already recorded, and about one hour was spent on the top.

The flat space on the top is not more than ten feet square. The stone is badly broken, and indeed the summit resembles a huge rock-pile flattened out at the apex. It is dangerous to get closer than within three feet of the edge anywhere on the top on account of the looseness of the boulders.

We found upon our arrival at the summit a lady-bug perched on the highest point of the highest rock, taking life easy at 13,972 feet above sea-level.

We were six hours making the climb from the McGee Creek camp, and the return was made in about three hours, and in two more hours we were in Bishop.

EDITOR'S NOTE.—Former ascents of Mount Humphreys as far as known are: James S. Hutchinson and E. C. Hutchinson, July, 1904 (see SIERRA CLUB BULLETIN, Jan., 1905, vol. V, No. 3, p. 153); Dan Samardich, a prospector, 1917; George R. Bunn and two companions, August, 1919 (see SIERRA CLUB BULLETIN, Jan., 1920, vol. XI, No. 1, p. 56.)

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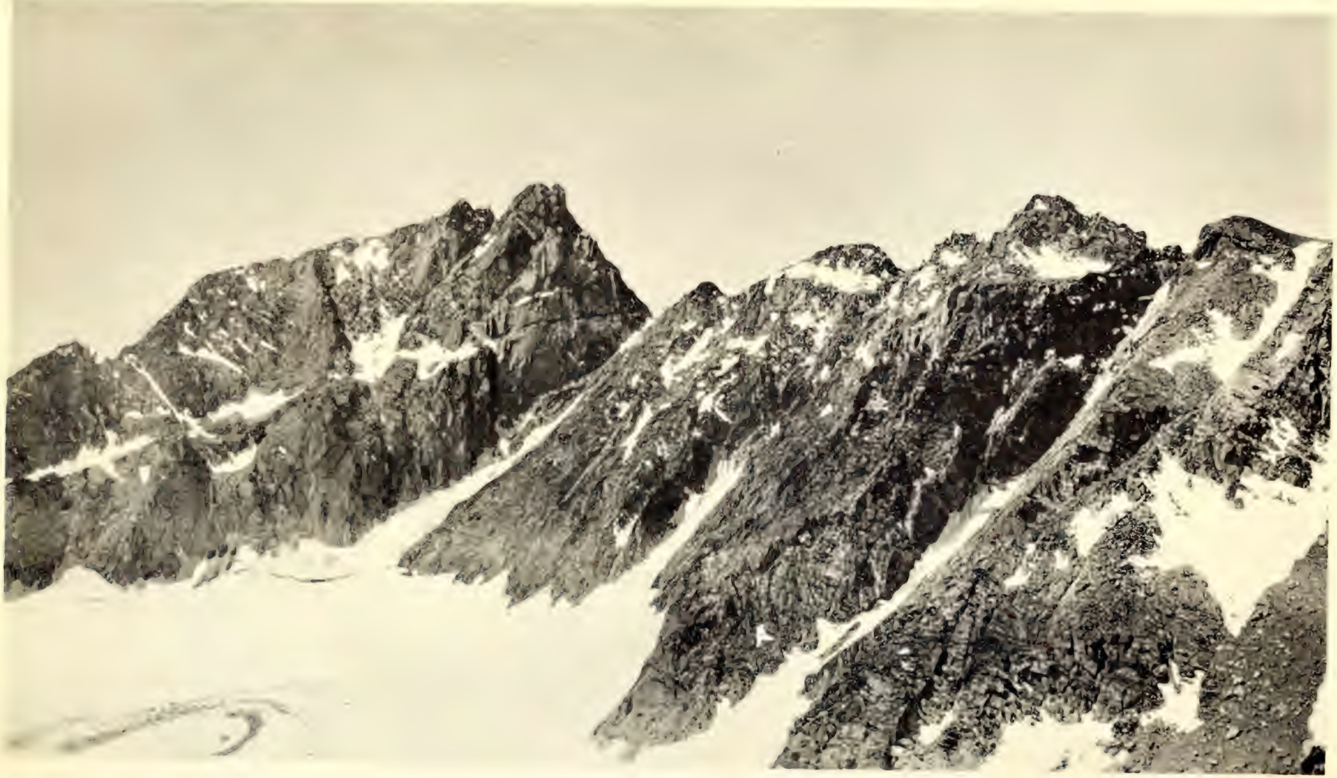
MOUNTAIN-CLIMBING NOTES

By Francis P. Farquhar

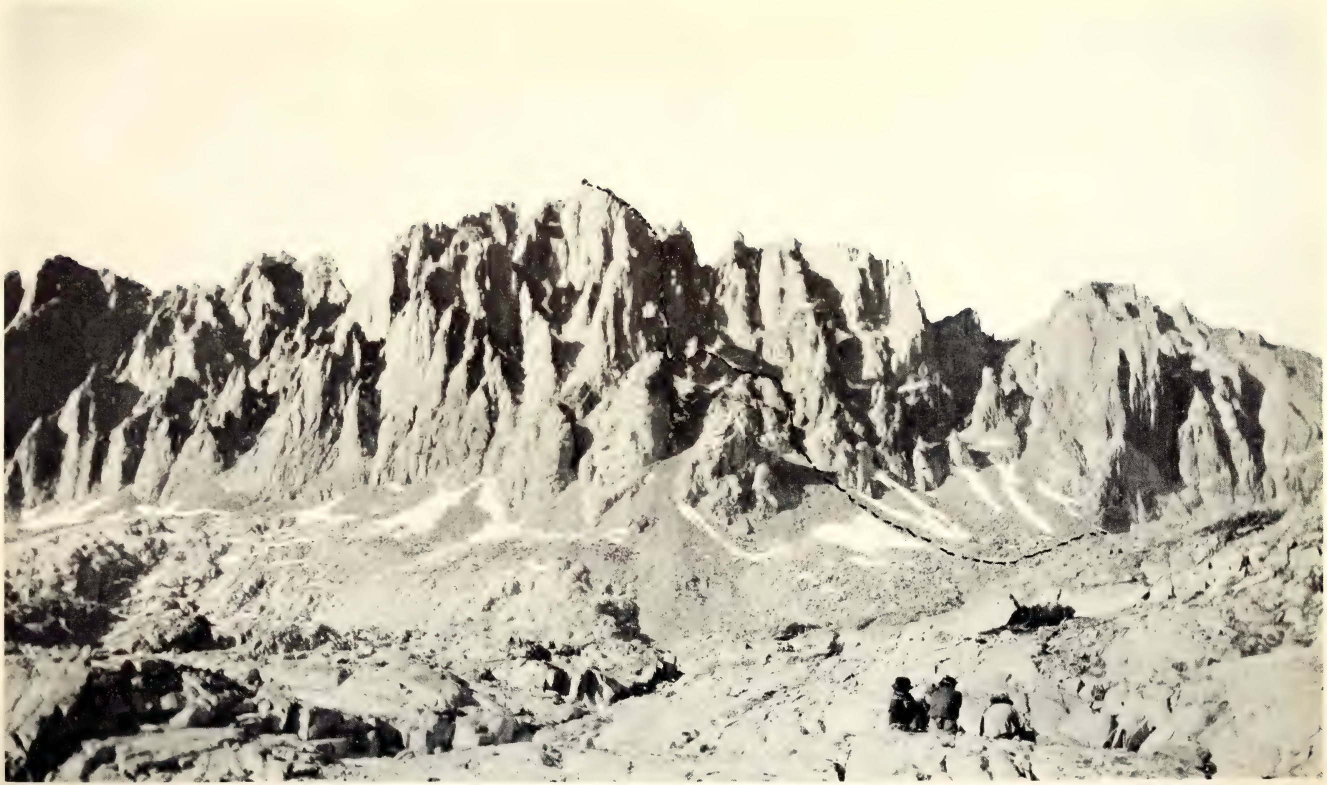
I. NORTH PALISADE (14,254 FEET)

The North Palisade is the third highest peak in California, exceeded only by Mount Whitney and Mount Williamson. It has always been considered one of the most difficult peaks to climb in the Sierra. A brief summary of its history and of the route of its ascent is given here for the benefit of future travelers.

The first ascent was made July 25, 1903, by Joseph N. Le Conte, James S. Hutchinson, and James K. Moffitt. It was not climbed again until ten years later, when two parties from the Sierra Club outing of 1913 reached the top. Hilda M. Atkinson and Charles W. Michael made the climb on July 19th, and



MOUNT HUMPHREYS FROM THE NORTH
Photo by C. H. Rhudy



THE NORTH PALISADE (14,254 FEET)
Dotted line shows route of ascent
Photo by George D. Whittle

on the 21st Professor Joseph N. Le Conte led a party of twelve safely over the difficult route. The members were: Robert M. Price, W. Leon Dawson, J. Floyd Place, John S. Burd, F. G. Chamberlain, Frank M. Bumstead, Mary E. Haskell, T. V. Bichowsky, Raymond Bontz, Harry M. Snell, George Merritt, and Robert L. Lipman. The following year, on August 1, 1914, O. Sargent Norton and W. Sherwood Norton registered at the summit. The next ascent was on August 1, 1919, by James E. Rother and W. S. Solari. Last summer four members of the Sierra Club outing—Robert M. Price, Walter L. Huber, Norman Clyde, and Francis P. Farquhar—reached the summit on July 1, 1920.

An account of the first ascent with a description of the route was published by Professor Le Conte in the SIERRA CLUB BULLETIN for January, 1904 (volume V, number 1); but as this is now out of print, an outline of the route has been traced on the accompanying photograph of the mountain, taken by George D. Whittle from Palisade Basin last summer. The base is best reached from Palisade Creek, where camp can be made at Deer Meadow. A stream descending from Palisade Basin enters the creek at this point, and up this stream lies the best approach. Keeping to the northwest, head directly for the mountain. As it comes in view, select the largest cleft in its face and ascend the talus-pile that leads to it. Once fairly in this largest cleft, the way can hardly be mistaken, as only one possible route to the summit has yet been discovered. As the way becomes steeper and the talus is left behind, look for a ledge on the face of the wall to the left (north). Cairns of rock have been built along it by former parties. It can be reached from the upper (right-hand) end. This is the first place on the climb that requires particular caution. From the lower end of the ledge look back, and directly above will be seen a narrow cleft parallel to the larger one that you have just left. From here on it is a stiff climb to the top of the cleft, and even within a few feet of the summit there are some difficult spots. The difficulty will vary with the quantity and hardness of the snow that chokes one section of the narrow cleft. About twelve or thirteen hours should be allowed for the round trip from Deer Meadow. The descent from Palisade Basin may be made by way of Glacier Creek.

The Palisades received their name in 1864 during the explorations of the State Geological Survey under James Dwight Whitney. They were reported as being at the head of the North Fork of Kings River, as it was not then known that the Middle Fork intervened and that the North Fork did not reach the crest of the Sierra. They were supposed to be of volcanic origin, but have since been discovered to be of granite. The great glacier at the eastern foot of the North Palisade was not known until a few years ago. The North Palisade has been locally and temporarily known as Dusy Peak and as Mount Jordan.

II. SEVEN GABLES (13,066 FEET)

Seven Gables is a picturesque mountain dominating the headwaters of Bear Creek, one of the tributaries to the South Fork of San Joaquin River. Theodore S. Solomons, who made the first ascent and gave the name to the mountain, describes the superb view in the SIERRA CLUB BULLETIN for May, 1895 (volume I, number 6, page 230). Solomons was in doubt about the identity of the neighboring peaks, as the region was then unmapped. The panorama, as identified from the U. S. Geological Survey maps, includes the Merced, Lyell, and Ritter groups to the northwest; Red Slate Peak, Red-and-White Peak, Hilgard, Abbott, to the north; Bear Creek Spine, Mount Tom, Humphreys, to the east; North Palisade, Darwin, Goddard, to the southeast and south. Many others lie in between. With a field-glass Mount Whitney can be clearly distinguished just to the left of a sharp peak on the Goddard Divide. Mount Brewer and the Milestone can also be seen with a glass to the left and right, respectively, of Mount Goddard. The Kaweah Peaks, a little farther to the west, are very distinct. Innumerable lakes and snowy cirques are near at hand on every side.

The upper Bear Creek region is ordinarily reached either from Vermilion Valley over the Bear Ridge trail or from Blaney Meadows over Seldon Pass. It is also possible to follow up the cañon of Bear Creek from its lower end, avoiding the long ascent of Bear Ridge; but this is not recommended until a better trail has been built. By more or less difficult foot routes, without trail, the region can be reached from French Cañon on the south, from the Recesses of Mono Creek on the north, or from the eastern side of the Sierra.

The ascent of the peak is made from the South Fork of Bear Creek, on the southwest side of the mountain. The way can easily be found and the round trip can be made without difficulty in half a day from the highest suitable camping-place on the South Fork.

The first ascent was made on September 20, 1894, by Theodore S. Solomons and Leigh Bierce. The only ascents recorded in the Sierra Club register, placed on the summit in 1898, are: June 30, 1898, C. L. Cory, J. N. Le Conte; July 19, 1911, J. S. Hutchinson, J. N. Le Conte; June 19, 1917, H. H. Bliss, A. L. Jordan; July 10, 1920, Florence E. Atkinson, Robert M. Price, Francis P. Farquhar, A. H. Rzeppa, George D. Whittle, F. Bourn Hayne.

Professor Le Conte has given a brief account of his ascent of 1898 in the Sierra Club Bulletin for January, 1899 (volume II, number 5, page 253). Mr. Jordan describes his ascent with Mr. Bliss in 1917 in the Sierra Club Bulletin for January, 1918 (volume X, number 3, pages 292 to 293). Seven Gables deserves to be visited more frequently.

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Golden Eagles in the Sierra

Having had an interesting experience in the Tehipite Valley last summer, and finding, upon talking the matter over with those who are familiar with the Sierra and the habits of eagles, that this was a unique experience, I am submitting a brief note for the Bulletin.

In company with my oldest son, Henry, and Leonard Keeler, a son of Charles Keeler, I made the ascent of Tehipite Dome from the floor of Tehipite Valley toward the end of July, 1920. We had ascended the wall of Tehipite on the west side of Crown Creek, crossing the creek two or three miles above the falls, and had made our way through the bad tangle of brush up on the ridge which leads out to the dome. We were still in the forest, but far enough out so that we could look down into Tehipite Valley, the floor of which was over 3000 feet below. We were suddenly surprised by a tremendous roar, which continued increasing in intensity. The boys thought it must be a rock avalanche, and though it sounded very much like the reverberation that comes from such avalanches, I placed the noise up in the air, and involuntarily glanced up expecting to see the branches of the trees whipping about and bending under the effects of a local hurricane or whirlwind, for this seemed, on the spur of the moment, the most plausible explanation of this great volume of sound. Instead I saw two golden eagles tearing through the air and descending at an angle of at least forty-five degrees, passing immediately over the tops of the trees above our heads and shooting down into the depths of Tehipite Valley. Their immense wings were bowed in close to their bodies, and as they went shooting down they gave one the impression of tremendous power and energy, very much like the proverbial falling thunderbolt. I do not know when I have witnessed anything which has given me a greater impression of tremendous power. Accompanied by the almost unbelievable roar produced by their sudden descent through the air, one can well understand how small helpless creatures like the fawn would be petrified by terror and become the easy prey of these powerful birds.

Dr. C. Hart Merriam, formerly chief of the U. S. Biological Survey and connected with the Smithsonian Institution, tells me that in his varied travels he has only once witnessed a similar occurrence. This was in the San Francisco Mountains of Arizona, when he and his companion, Mr. Bailey, heard a similar roaring sound, and, looking up, saw a golden eagle shooting down out of the air, aimed directly at them. Mr. Bailey involuntarily, in order to save himself from what seemed impending catastrophe, raised his gun and shot the bird, which fell dead at their feet. Upon mature reflection, the only explanation they could give was that they were standing in the vicinity of the only water-hole to be found on that portion of the mountain, and that this eagle was either descending in search of prey or to visit this water-hole.

I have, both in the Kern River and from Eagle Peak in Yosemite, seen an eagle close his wings and shoot down with incredible speed for 1000 feet or more, and then spreading his wings sail away in the distance, but in each case these birds were so far away that I did not hear the tremendous roar which necessarily accompanies this performance. Perhaps other readers of the BULLETIN may have similar experiences to recount.

WILLIAM E. COLBY

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LETTER FROM THE SECRETARY OF THE INTERIOR

Washington, D. C., December 13, 1920

MY DEAR DR. BADÈ:

Thank you for yours of December 7th.

Under separate cover I am sending you a copy of my annual report.

Senator Walsh has introduced a bill, S. 4529, authorizing the construction of a dam within three miles of the outlet of Yellowstone Lake. The exact spot is not indicated. Senator Jones has introduced a bill, S. 4554, to repeal so much of the Water Power Act as opens the national parks. The Walsh Bill should be defeated; the Jones Bill should be passed.

Sincerely yours,

JOHN BARTON PAYNE

The following telegrams were read at the Annual Reunion Dinner of the Sierra Club in the ballroom of the Palace Hotel, December 10, 1920. Covers were laid for three hundred persons and it was the most notable occasion of the kind in the history of the club:

DR. WM. F. BADÈ, Berkeley, Cal.

It is a course of much regret to me that I cannot attend your annual dinner, but important National Park problems make my presence here necessary just at this time. However, kindly extend my heartiest greetings to my fellow Sierra Club members present and wish them for me a very enjoyable evening. In the critical fight now on for the preservation of the parks I feel confident that we can depend on the Sierra Club as in similar past conflicts as a strong ally to use every means to combat the efforts to desecrate our national playgrounds. Secretary Payne has said that the Parks shall be kept inviolate and free from commercialization. In this firm stand he will need your support.

STEPHEN T. MATHER

DR. WM. F. BADÈ, Berkeley, Cal.

Imperative duties keeping me from Sierra Club reunion dinner, I ask you to read this telegram of admiration and congratulations to the club. It is worth while for the United States to have such an organization exist, and its members deserve congratulations on its achievements, and on the opportunity to stand firm for those achievements in vigorous and determined opposition to the present ominous assault on the integrity of our national parks by irrigation and power interests who are unwilling that even one per cent of the public lands shall be held sacred for the recreational use of all the people. In preservation of great natural wonders the Sierra Club stands as the strongest western bulwark against this aggression.

J. HORACE MCFARLAND,
President American Civic Association

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DEAR MR. COLBY:

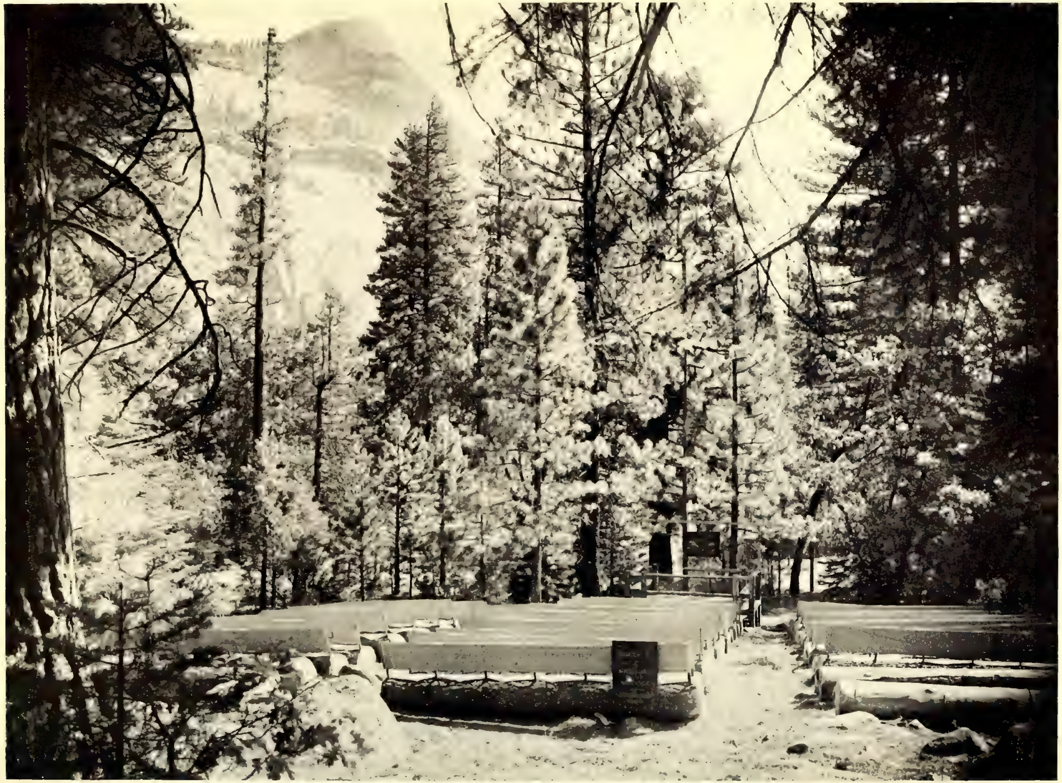
I feel it my duty as well as privilege to pass on to members of the Sierra Club a bit of the pleasure that was given me last July by the Canadian Alpine Club.

Early in June our train found a way into what had for some hours seemed to us a great barrier of glistening white peaks, and, in company with my mother and father, I had my first view of the beautiful little town of Banff.

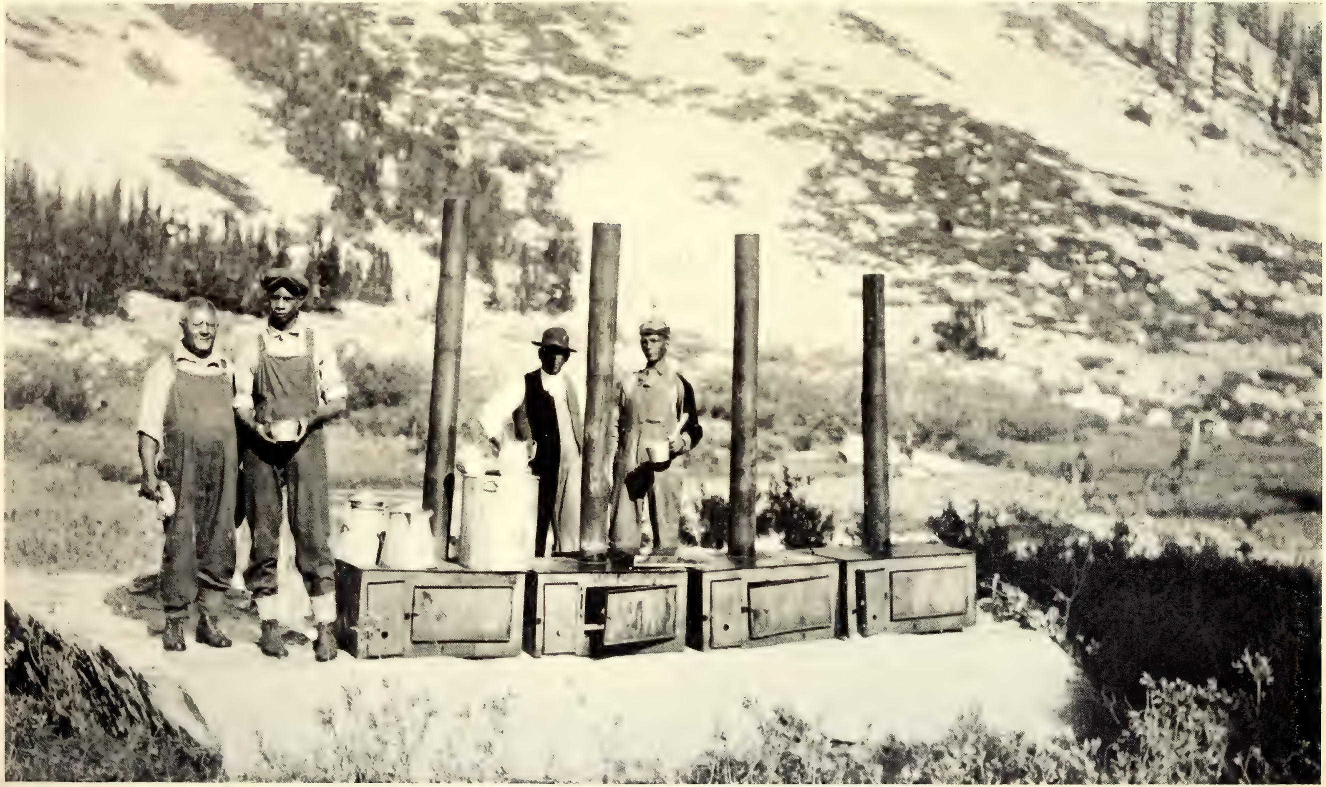
Snugly tucked away in my bag was your letter, which was my credential as a Sierra Club member.

I soon found my way to the beautiful home built by the Alpine Club on the slopes of Sulphur Mountain, enjoyed the wonderful view from the veranda, had the pleasure of being received by the secretary, Mr. Mitchell, and was assured that I would be a very welcome guest at the annual gathering of the club, which was to be held at the foot of Mount Assiniboine, the Canadian Matterhorn.

There were delays in opening camp, as mountaineers know is not unusual, and July was well spent when our little company of twenty, under the leadership of Colonel Foster, was away, going the first six miles by launch up the beautiful and historic Bow River.



THE NEW AUDITORIUM AT LE CONTE LODGE, YOSEMITE
Photo by Boyson Studio



SIERRA CLUB COMMISSARY, 1920
Little Pete Meadow, Middle Fork of Kings River
Photo by Rodney L. Glisan

I was quite athrill when I learned that one of our party was Ernest Feuz, a real Swiss guide.

Our beautiful trail led us the third day into the camp we had been anticipating so long—a little white city of tents, the most busy of which we found to be the large dining tent, which seated one hundred and fifty climbers at a time.

And let me not forget to tell you of the tea tent. I care nothing for tea—in fact, quite dislike it at home—but I am now sure there is no one of us so averse to tea as to be able to enjoy the friendship of these charming people and not be lured by the sociability over the teacups.

What a wonderful camp-spot it was in that wide alpine meadow near Lake Magog with its ever-changing reflections of one of the most beautiful and majestic of all mountains, Mount Assiniboine! The boom of avalanches was our morning serenade.

Conversation around the camp-fire was on the work of the day, centering, I think, on Mount Magog, the official graduating climb up which new members must make their way in order to qualify as active members.

Mr. Patterson, the president, gave me the thought that, while the club is proud of their record of ascents, the fact that these ascents are being made with safety is a source of greater pride to them.

Mr. Mitchell gave me the message that a cordial welcome awaits any Sierra Club people who may come that way. I truly congratulate anyone who may be so favored as to meet with the Canadian Alpine Club.

Yours very truly, GERTRUDE ENID PARKER

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GEOLOGICAL SURVEY, DEPT. MINES
SYDNEY, N. S. WALES
AUSTRALIA

November, 5, 1917

MR. W. E. COLBY,
402 Mills Building, San Francisco, Cal., U. S. A.

Dear Mr. Colby: It is with great pleasure that I received the January (1917) number of the Sierra Club Review. The reading is excellent; John Muir's note on glacial action is very fine indeed. In Muir you had a man in America long ago who explained the action of ice-rivers, and it was really quite unnecessary to have waited until Henry Gannett made his great rediscovery, or, rather, belated contribution to glacial studies. John Muir evidently was not understood in his generation, but he will surely come to his own now, and he will become one of the "Immortals," one who illustrated the force of the passages, "Blessed are the meek, for they shall inherit the earth," and "Blessed are the pure in heart, for they shall see God."

The only thing missing in John Muir's account of the sculpture of the Sierra which I note is the apparent failure to recognize the great preglacial action of streams in carving the deep cañons of the Merced, San Joaquin, etc.

Had I had access, however, to the treasure-house of knowledge afforded by the Sierra Club's reprint of Muir's notes, I would have written a much better note on "An Excursion to the Yosemite" in 1910, as I would have had a much larger number of valuable facts to draw upon than I had as a result of my limited observations alone.

The illustrations of the volume, or, rather, part, are up to the usual excellent standard.

With kindest regards, I am,

Yours sincerely, E. C. ANDREWS

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MOUNT CLARK TRAIL

In June Mr. L. L. Stopple and myself blazed a trail from Mount Clark to the Merced Pass Trail in the Illilouette Valley, a distance of about five miles. The trail branches from the Merced Pass Trail at a point but a few hundred feet from the first large stream-crossing encountered (Gray Creek) since leaving the Glacier Point Trail, indicated by a sign alongside the trail, "To Mt. Clark." The blazes terminate at a suitable campground about a mile below the mountain on the Clark fork of Gray Peak Creek. In ascending the mountain, follow up the cañon till almost under the peak, then turn to the right and work around the southern shoulder of the mountain, ascending it on its eastern face. It is quite a difficult and dangerous climb and should be undertaken only by those who understand mountaineering thoroughly. The reason the blazes did not continue beyond this campground was for the reason that the forest is rather open in this high altitude, and also that the mountain is very evident, looming nearly 3000 feet above the campground. The trail is blazed only one way—going to the mountain—so a thorough understanding of the country should be obtained to make the return an easy matter, although the nearness of the creeks of the Illilouette Valley should prevent anyone from going astray, as they all flow to the Yosemite. The end of the blazes is indicated by a large arrow cut in a tree.

Register tubes with scrolls were placed on the following peaks: Mount Clark, Red Peak, Gray Peak. Register scrolls were also placed in the tubes on Grizzly Peak and Mount Conness. A new tube should be put on the latter mountain. In the coming season I shall endeavor to put a tube and scroll on Mount Starr King. ANSELL E. ADAMS

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The Sierra Club learns with deep regret of the death of Mr. Charles P. Punchard, Jr., at Denver on November 12, 1920. Mr. Punchard had been since August 1, 1918, the landscape engineer of the National Park Service.

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CLUB EXTENSION

While the purpose of the Sierra Club is not fraternal, nevertheless the threads of lasting friendships spun therein interweave all the club's activities and strengthen incalculably its whole fabric. For this reason the Membership Committee wishes to see extended to other parts of the state the reunions and informal gatherings that are so frequent and delightful among the members who live in and around San Francisco. To this end the membership has been grouped according to locality; representatives are being appointed in each district, to whom lists of all members in that locality will be furnished. Any member of the club may thus find out who are the other members in his vicinity. It will be left to the various groups to make their own arrangements for any sort of meetings or entertainments they may wish to hold. The club has some excellent lantern-slides of the High Sierra which any representative may obtain from the San Francisco office. In some instances, also, lecturers can be supplied. Further information may be obtained by addressing the chairman of the Membership Committee, Sierra Club, Mills Building, San Francisco.

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LOCAL CHAIRMEN OF MEMBERSHIP COMMITTEE

SAN FRANCISCO, Alameda, Berkeley, Crockett, Emeryville, Mare Island, Oakland, Piedmont, Richmond, San Rafael.
Room 402, Mills Bldg., San Francisco.

SACRAMENTO, Arbuckle, Chico, Durham, Galt, Gridley, Hamilton City, Oroville, Sutter Creek, Vacaville.
C. M. GOETHE, Inverness Bldg., Sacramento.

STOCKTON, Byron, Lodi, Middle River, Turlock.
H. R. MCNOBLE, Box 214, Stockton.

FRESNO, Clovis, Fowler, North Fork, Sanger, Selma.
A. L. BRAVERMAN, Box 1052, Fresno, California.

SONOMA, Napa, Petaluma, St. Helena, Santa Rosa.
MRS. CARRIE BURLINGAME, Sonoma, California.

PALO ALTO, Burlingame, Menlo Park, San Carlos, San Mateo, Stanford University.
P. J. TREAT, Stanford, California.

WATSONVILLE, Capitola, Carmel, Pacific Grove, Salinas, Santa Cruz, Seabright.
JOHN GARDNER, Watsonville, California.

SAN JOSE, Coyote, Gilroy, Los Altos, Los Gatos, Milpitas, Morgan Hill, Mt. Hamilton, Santa Clara, Saratoga.
MISS C. BELLE EATON, 530 North First St., San Jose.

REDDING, Dunsmuir, McCloud, Trinity.
LAURENCE J. KENNEDY, Redding, California.

YOSEMITE.
CHARLES W. MICHAEL, Yosemite, California.

SANTA BARBARA, Ventura, Oxnard, Montecito, Ojai, Nordhoff, Santa Paula, Santa Maria.
MISS EDNA L. WHITE, 24 West Arrellaga St., Santa Barbara.

RIVERSIDE, San Bernardino, Corona, Palm Springs.
EMERSON L. HOLT, Riverside.

SANTA ANA, Whittier, Fullerton, Downey, Tustin, Bell.
A. J. PERKINS, Santa Ana.

POMONA, Upland, Claremont, Cucamonga, Puente, Alta Loma.
MISS AURELIA S. HARWOOD, Upland, California.

(*Others to be added.*)

NATIONAL PARK NOTES

Annual Report of the Director of the National Park Service

The annual report of the Director of the National Park Service for 1920 may be obtained upon request from the National Park Service, Department of the Interior, Washington, D. C.

It is well worth obtaining and reading with care, for it contains much that is of vital interest to every lover of the mountains. One cannot read this report without feeling thankful that we began to preserve these park areas in time. The statistics and facts show that they are being regarded as a valuable and necessary element in our national life by rapidly increasing numbers of people who find in these public parks unequaled opportunities for healthful recreation, education, and enjoyment.

It is a temptation to quote liberally from this report, but as the volume itself is so easy to obtain, only a few figures and passages concerning the parks that come within the ordinary range of Sierra Club members are touched upon in these notes. The following paragraphs are quoted or abridged from the report:

One outstanding feature of the year's achievements undoubtedly is the fact that, while trying economic conditions throughout the country, inflated valuations, increased prices of labor and materials have caused disturbances in every line of human activity and contributed to the general unrest of the masses, our people have turned to the national parks for health, happiness, and a saner view of life. Our final returns show that the volume of tourist travel to our national parks and monuments this year exceeded the million mark. The total for 1920 was 1,058,455, as compared with 811,516 for 1919 and 356,097 for 1916. In the last analysis, this travel is the deciding factor as to whether or not the parks are measuring up to the high standard that has been set for them and all that is being said about them as the great recreational and pleasure grounds of the American people. Our travel figures indicate that our people have enthusiastically and spontaneously accepted these national wonderlands as their own. They are taking a personal interest in them. They are using them.

But it is at this time, when the national parks are entering upon their period of greatest usefulness, that they are confronted with dangers that threaten their very existence. The most determined efforts are being made, and will continue to be made, by private irrigation and water-power interests to invade the sanctity of these great areas reserved from the national domain solely because of their matchless scenic exhibits. It is primarily toward the utilization of their wonderful lakes, rivers, and spectacular waterfalls that their efforts are directed, and we are squarely face to face with the fact that the whole national-park system is facing a grave crisis, where a single false step would be irremediable.

On June 10, 1920, the President signed an act to create a Federal power commission, to provide for the improvement of navigation, the development of water power, and other purposes. The title of the act is "The Federal Water-Power Act." In its early tentative form the bill was scrutinized by the National Park Service and the form as submitted considered to safeguard the national parks and monuments from commercial invasion for water-power or irrigation purposes. When the bill, as finally passed by Congress, was submitted for the President's signature it was found that it contained provisions opening up all the national parks and monuments for water-power development. The bill, however, was signed with the understanding that necessary amendatory legislation would be presented and passed at the next session of Congress excluding the national parks and monuments from within the scope of the act.

This bill creates a commission which is empowered to issue to citizens of the United States or to corporations licenses for the purpose of constructing, operating, and maintaining dams, water-conduits, reservoirs, power-houses, transmission-lines, or other power project works along and on navigable waters of the United States, or upon any part of the public lands and reservations of the United States. The act then defines "reservations" to include national parks, national monuments, Indian and forest reservations. These reservations, among other public lands, are subject to the commission composed of the Secretary of War, the Secretary of the Interior, and the Secretary of Agriculture. In other words, the national parks and monuments are taken out of the hands of Congress, which has always retained its immediate jurisdiction over the national parks, and are turned over to the hands of this commission for commercial development. As a result of this law, applications have been made to the commission for licenses for water-power rights in the Sequoia and Yosemite national parks and in the Grand Cañon National Park; in fact, there is not a lake or a waterfall in any one of our national parks that can not be levied on for water-power purposes.

The city of Los Angeles has made application to the State Water Commission for various permits for utilizing water in the Yosemite and Sequoia national parks. The following examples will indicate the extent to which such applications would affect these parks:

The city's application, No. 1867, contemplates a reservoir within the Yosemite National Park in Virginia Cañon, near its mouth; also a reservoir in Tuolumne Cañon, to flood Glen Aulin, together with a conduit which will bypass the water-wheels at California and LeConte falls, extending to a power-house at the mouth of Return Creek. Another intake is to be constructed immediately below this power-house and from it a conduit will lead to a power-house in Tuolumne Cañon, immediately below Harden Lake.

Their application, No. 1868, for a permit to utilize water for the generation of electrical power, contemplates a storage reservoir on Merced Lake in the Yosemite National Park, with a conduit leading from this reservoir to a power-house to be located in Little Yosemite Valley; also a diversion of Illilouette Creek and Buena Vista Creek, at their mouths, with a conduit leading from said diversion to the before-mentioned power-house in the Little Yosemite Valley; also a reservoir and diversion at an elevation of 4000 feet, just below Wawona, with a conduit leading from this point to a power-house on the South Fork of the Merced River, at an elevation of 3500 feet.

Every thinking American, East and West, strongly favors the long-neglected development of our national water resources, and any attempts to make it appear that the defenders of our national parks are opponents of irrigation and water-power development are bound to fail. This is not a sectional question, and it can not be made one. The fullest possible development of western water resources is a national policy of the utmost importance to the whole people. So, also, is the development to its modest logical limits of the national-park system. The fact that the national-park system will hold out from commercial use an extremely small proportion of the enormous undeveloped water resources of the country does not prove that the parks' defenders are opponents of national water development. On the contrary, it shows that they are the discriminating seers of a use for this small part of the national waters which is of far greater value to the nation at large than they could ever be to certain communities living on park borders.

The devotion of the mountaineering clubs to the high ideals of the National Park Service and their affection for the snow-capped mountain ranges of the parks have been repeatedly emphasized. By friendly suggestions and constant enthusiastic support in the solution of our problems, these ever-alert friends have, since the establishment of the national-park system, been ready to render aid in maintaining the integrity of the parks and the policies of the service. Even as they in the past helped to defeat determined sheep raids against some of the parks, they have fought against the indiscriminate invasion of the parks for commercial purposes during the past year. The Sierra Club, the Mountaineers, the Mazamas, the Boone and Crockett Club, and others determinedly opposed the opening up of the Yellowstone for irrigation and stood against the application of the Federal water-power act to our national parks and monuments as a whole.

The legislature of the State of California, by the act of April 15, 1919, ceded exclusive jurisdiction to the United States of the territory within the metes and bounds of the Yosemite, Sequoia, and General Grant national parks, and by act approved June 2, 1920, Congress accepted the cession by the State of California of exclusive jurisdiction of the lands embraced within the above-mentioned national parks. As required by section 7 of said act, the United States District Court for the Northern District of California has appointed a commissioner to reside in Yosemite National Park, who has jurisdiction to hear and act upon all complaints made of any violations of law, or of rules and regulations made by the Secretary of the Interior, for the government of Yosemite National Park, and for the protection of the animals, birds, fish, and objects of interest therein, and for other purposes authorized by the act. As required by section 8 of said act, the United States District Court for the Southern District of California has appointed a commissioner for the Sequoia and General Grant national parks, to reside in one of the said parks, who has similar jurisdiction over these parks.

Mr. C. A. Degnan is the United States commissioner for Yosemite National

Park, and Mr. Walter Fry, our former superintendent of Sequoia and General Grant parks, is now United States commissioner for these parks.

It is a pleasure to be able to record each year that Yosemite National Park has completed its greatest and most successful season. Every season since my official connection with the national parks was formed Yosemite has exceeded all previous records of travel and has steadily forged ahead in improvements.

Only recently, while in the Yosemite Valley, I surveyed all of the achievements of the past five and one-half years, especially of the five seasons of Superintendent Lewis' incumbency, and as I compared the park of to-day with that of 1915 I realized as never before what a tremendous change in conditions had been wrought. All of these accomplishments have been in the public interest, and all have redounded, as made, to the pleasure of the park's patrons. That the people themselves have appreciated what has been done there is indicated plainly by the fact that ever-increasing throngs go to the park each summer, even though approach roads are bad and many of the roads within the park are often in a state of disrepair on account of shortage of funds.

It is a source of deep regret to me that other demands upon the resources of the Yosemite National Park Company for more immediate expenditures in facilities for summer visitors continue to postpone the erection of the hotel, but there is no question about the building of the new hotel. The site finally selected for the hotel is that formerly occupied by Camp Lost Arrow, not far from the foot of Yosemite Falls. This is a secluded spot and is very beautiful. Camp Curry made several betterments in its plant. It erected a new transportation office, a post-office, telephone and telegraph station, and a storage building for automobiles. It enjoyed a most successful season and, like the other hotel and camp enterprises, gave good service at reasonable rates. Expansion in housing facilities must continue in Yosemite Park, because travel will grow heavier each year.

A highway from Mariposa to El Portal, which is so essential to the development of the winter use of the park, has been indefinitely delayed because of lack of funds to do the construction work. The plan covered in my last report, whereby five-dollar certificates, good for admission to the park when exchanged at the park gates for automobiles permits, were to be sold at par, the proceeds to be used to build and pave this road, failed to meet with the popular support that was expected. The funds raised under this plan have now been placed in trust, to be used in paving a part of the Mariposa-El Portal Road when it shall have been graded and made ready for permanent surfacing. It is to be regretted that this project has been temporarily postponed, not alone because it holds back the consummation of plans for the winter use of the park on a large scale, but also because the present approach roads to the park—the Big Oak Flat and Wawona roads—are usually in such a bad state of repair as to discourage travel in summer-time.

In 1919 over 18,000 people camped in the free public camps on the floor of the valley, and this year they increased to 25,000. Many of them spent the entire summer on their chosen pleasure-ground. On any given date of the season there was the population of a fair-sized city living in the public camps, not to mention those who patronized the hotel, lodges, and permanent hotel camps. The problems of sanitation and water supply were of transcending importance, and caused no little anxiety. As far as the sewage difficulties are concerned, the end is in sight, as a new sewer system is under construction.

After reading what has already been said about the year's developments in Yosemite Park, the Sierra Club members and other readers interested in the out-of-the-way places of the park may feel that too much attention is being given to the care and entertainment of motorists and other visitors who use only the roads and the hotels, lodges, and permanent camps. This, however, is not the fact. We are moving forward as fast as possible with the construction of trails in and about the Tuolumne River Cañon, which has never been opened even to pedestrians, and which of course never will be accessible to motorists. It was impossible, however, to accomplish much this year on account of inability to procure the special type of labor needed to perform heavy trail-construction work. The trail from Harden Lake into Pate Valley will be finished next year, and if appropriations are made as requested the trail from Waterwheel Falls down the Tuolumne River to Pate Valley will be built. Also, a trail will be constructed via the north wall of the cañon up Piute Creek to connect with the Pleasant Valley and other trails belonging to the system in the extreme northern part of the park.

In the Yosemite National Park, as in all of the other parks, the policy which contemplates leaving large areas of high mountain country wholly undeveloped should be forever maintained. Under this policy I never consider opening up any of the territory north of the Tuolumne River Cañon, the cañon itself, or any part of the region below Mount Lyell.

Early in the present calendar year it appeared for a time that all of the general legislation affecting Sequoia National Park then pending in Congress would be enacted into law forthwith, and that when the preparation of this report would be undertaken the park would be enlarged and changed in name to Roosevelt-Sequoia National Park. The extension bills came up for consideration in February, and both Senate (S. 1391) and House (H. R. 5006) measures were favorably reported by the Public Lands Committees. In the case of the Senate bill the committee, on February 25, 1920, recommended passage without change in form or substance. However, when the legislation came up for consideration in its regular order, objection was interposed to its enactment.

On the House side hearings were held on February 24, 25, and 26, 1920, by the Public Lands Committee. The bill as introduced was indorsed by the following, who personally appeared before the committee: Mrs. Marion Randall Parsons, representing the Sierra Club; Mr. H. E. Patterson, secretary of the Fresno Chamber of Commerce, representing the chamber and other business organizations; Mr. Jesse B. Agnew, representing the Visalia Board of Trade; and also Mr. Carl Bachem, timber expert employed by the Interior Department; Mr. H. M. Albright, field assistant; and myself. Opposing the bill as drawn, and urging extensive reductions in the territory involved, were Col. H. S. Graves, Chief Forester, and his assistant, Mr. A. E. Sherman.

After due consideration of the data presented in the hearings, the committee concluded to report the bill with certain changes in the boundary line, which were acceptable to this department but not favored by the Department of Agriculture. The committee report was filed on March 25, but the bill has not yet received the final consideration of the House.

Sentiment in California and in Congress is generally favorable to the Roosevelt National Park plan as covered by the pending legislation. The Forest Service, however, continues to contend that areas more valuable for grazing, lumbering, etc., than for park purposes are affected by the proposed enlargement of Sequoia Park, and for that reason seeks a revision of the suggested new boundaries. The eliminations of territory suggested by the opposing bureau include the Evolution Basin on the north, part of the rim of the great cañon of the Middle Fork of the Kings River (Tehipite Valley), the Horse Corral Meadow, and the J. O. Pass region, Hockett Meadow, Mineral King, and Franklin Pass sections of the present and proposed parks, and, finally, the Whitney Meadow territory, with its golden-trout streams. Negotiations looking toward an adjustment of the differences between the two sides are still in progress.

The proposed new road to the Giant Forest from the Middle Fork of the Kaweah River is our most essential improvement project for several reasons. First, the state has promised to expend $300,000 paving the road to the Middle Fork gateway if our new road is built, and, second, the old road up the Marble Fork is in a bad state of disrepair and is no longer safe for two-way traffic. To begin work on this highway next spring, funds will be asked immediately, and I can not too strongly urge the necessity for favorable action on the estimate as submitted.

The Kings River Parks Company, many stockholders of which are interested financially in the Yosemite National Park, has taken over several business establishments in Sequoia and General Grant parks under a two-year permit from the Interior Department. Among its purchases were Camp Sierra in the Giant Forest, and pack- and saddle-horse service at that point, the hotel camp in General Grant Park, the trail transportation facilities there, and likewise the store. This company plans extensive developments as soon as the enlargement bill is finally acted upon by the Congress.

The Kings River Parks Company, under permit from the department, in June took over the camp and store properties in the park, having purchased them from the General Grant Park Hotel Company. The Kings River Company also acquired the saddle-horse business in the park. Automobile transportation from Fresno continued to be operated by the Kings River Stage & Transportation Company, while a new automobile stage line to the park from Visalia was established by W. M. Collins under a yearly permit from this service. The Kings River Parks Company contemplates several important improvements for its General Grant properties, in anticipation of still larger travel. We, too, expect constantly increasing travel, and to perform the obligations by the Government to these visitors our appropriations should at least be doubled next year. Not only should the roads and trails be kept in better condition, but campgrounds must be extended and improved, sanitation bettered, and the water supply augmented.

Among the national monuments is the Pinnacles National Monument, in

San Benito County, California, created by presidential proclamation on January 16, 1908. Its many spiral-like rock formations, from 600 to 1000 feet high, are visible for many miles and give the monument its name. No money was spent on the monument during the year. An unfortunate situation exists here. Recent purchasers of an alienated tract of land within the monument, which is traversed by the sole road, have fenced off access to the monument and are charging a toll for passage over their land. It is not possible to say at this time what the remedy is, but during the next year I hope to investigate the situation fully in order to make the monument accessible without charge to all who care to see it.

From time to time efforts have been made to save some of the remaining groves of the palms (*Washingtonia filifera*) in southern California by incorporating them within national monument bounds. A drawback has been the widely separate locations of the main stands, but from a botanical standpoint it is hoped that eventually some arrangements can be perfected whereby some of these palms can be placed under Government protection. To this end Representative William Kettner, of California, introduced in Congress, January 15, 1920, a bill (H. R. 11733) "making reservation and withdrawing from settlement, occupancy, or sale and dedicating and setting apart as a national monument a certain tract of land in the county of Riverside, Calif." This proposed monument includes the famous grove of palms in Palm Springs Cañon, about fifty miles from Riverside. It appears, however, that nearly all of the lands are privately owned or the Indians of the region have acquired vested interest therein, and that, as far as these lands are concerned, it would be necessary to obtain the full and free consent of the Indians to the disposition of the lands at a price to be agreed upon. It is to be hoped that some arrangements can be made to purchase the Indian lands, as well as the other private lands, possibly by private contribution, for this region, with its groves of palms and other desert flora, is worthy of preservation as a national monument.

The National Park Service has continued during the year 1920 under the direction of Director Stephen T. Mather, with Mr. Arno B. Cammerer as Assistant Director. On March 8, 1920, Superintendent Horace M. Albright of the Yellowstone National Park was designated field assistant to the director in addition to his other duties. William H. Peters, formerly assistant engineer of the Service, was acting superintendent of Grand Cañon National Park from August 2, 1919, to October 13, 1920, when he became superintendent of Mount Rainier National Park, succeeding Mr. Roger W. Toll, who resigned. Mr. D. L. Raeburn, a former superintendent of Mount Rainier, was appointed superintendent of Grand Cañon National Park in October, 1920. On July 12, 1920, Colonel John R. White was appointed superintendent of Sequoia National Park and acting superintendent of General Grant National Park, filling the vacancy caused by the resignation of Judge Walter Fry, who on July 15th accepted the office of commissioner for these parks under the Department of Justice. Walter W. Payne resigned as superintendent of Glacier National Park, effective June 30, 1920, and was succeeded by George E. Goodwin as acting superintendent in addition to his duties as engineer to the Service.

FORESTRY NOTES

RECENT DEVELOPMENTS AFFECTING CALIFORNIA'S FORESTS

BY WALTER MULFORD

Good cheer! Such is the message 1920 leaves for the friends of California's forests. It is probable that the year has marked a decided upward turning-point in the progress of forestry in the country of the sugar-pine and the redwood.

Of first importance is the development of a strong national movement to bring about the practice of forestry on privately owned timberlands. The issue is so fundamental to the American forest, and is so likely to lead to a vigorous contest in Congress in the near future, that a special article is included in this number of the BULLETIN explaining the situation in some detail.

The outstanding local development has been the formation and effective work of a group of men officially representing most of the leading forest interests of the state, who have *worked together* for forestry instead of each going his way in his own corner of the big general forest problem. This California Forestry Committee consists of Donald Bruce, associate professor of forestry in the University of California, chairman; R. E. Danaher, representing the California White and Sugar Pine Manufacturers' Association; G. M. Homans, State Forester; D. A. McAllaster, Land Commissioner of the Southern Pacific Railroad; P. G. Redington, District Forester of the United States Forest Service. A representative of the redwood lumbermen is to be added. The committee has employed Mr. W. C. Hodge, a technically trained forester. Organized in the spring of 1920, the committee has already made substantial progress. It deserves the loyal support of all Californians who believe in trying to settle conflicting interests by working together.

A new State Board of Forestry was created by act of the legislature in 1919, to consist of the State Forester and four persons to be appointed by the Governor, one of whom must be familiar with the timber industry, one with livestock, one with the grain and hay industry, and one at large. The board consists of Dr. George C. Pardee, Oakland, chairman; R. E. Danaher, Camino; Col. Ed. Fletcher, San Diego; G. M. Homans, Sacramento; Solon H. Williams, Yreka. This replaces the former ex-officio board, which consisted of the Governor, the Secretary of State, the Attorney-General, and the State Forester. The new board has recently announced its adoption of the following platform as being of first importance in the development of the state's forest policy: (1) Appropriation by the state legislature of sufficient funds for the prevention and suppression of forest, grain, and pasture fires outside the national forests; (2) Acquirement of logged-off areas, in both the redwood and pine regions, as a nucleus for a series of state forests; (3) Acquirement of watersheds necessary for the conservation of water for domestic and irrigation purposes; (4) Renewal of forests on logged-off areas and watersheds that are in need of reforestation.

The legislature of 1919 passed several measures designed to reduce the forest-fire hazard. It appropriated $25,000 to the State Board of Forestry for the biennium 1919-1921 for the prevention and suppression of forest fires; the board was authorized to divide the state into districts, employ district fire rangers, and under specified conditions pay fire-fighting expenses. The Penal Code was amended and now requires all gas tractors, oil-burning engines, gas-propelled harvesting-machines, and auto-trucks engaged in harvesting or moving grain and hay to be equipped with an effective spark-arrester. In the section regarding leaving camp-fires unextinguished, the phrase "upon departure" was changed to read "without some person in attendance." By a change in the Civil Code the United States is extended the right, heretofore limited to the state and counties, of recovering in a civil action double the damages resulting from fires caused by wilfulness, malice, or negligence, or the actual damage if the fire occurred accidentally, and the full costs incurred in fighting such fires.

A long forward step was taken on October 14 and November 5, 1920, at meetings of the California Forestry Committee, the State Board of Forestry, and a number of leading lumbermen, at which definite plans were formulated for the proper disposal of slash after lumbering.

Some progress is being made in the movement to preserve a number of groves and at least one large forest of the coast redwood north of San Francisco Bay. On May 3, 1920, Congress asked for a report on redwood areas suitable for national parks. At the request of the Secretary of the Interior, a survey was made in the fall of 1920 by the United States Forest Service, under the direction of District Forester Paul G. Redington, traveling expenses incurred in field-work being paid by the Save the Redwoods League. One representative each from the State Forester's office and the Division of Forestry of the University of California assisted in the survey. In the fall of 1920 the Save the Redwoods League was incorporated on a non-profit basis, its purposes being to encourage interest in the redwoods and bring about a better understanding of their value; to promote the establishment of national, state, county, and private redwood parks; to bring into unity of action all interests concerned in preserving the redwoods for scenic, recreational, and economic purposes; to acquire areas of redwood land in order to insure their preservation.

Improper taxation is a close rival to fire in its power to destroy forests. As someone has expressed it, Palestine was fairly well wooded until "the Turk put a tax on the tree." A California forester has been doing notable work in developing federal policies of forest taxation. Called from his professorship of forestry at the University of California in the spring of 1919, Major David T. Mason has been in the federal Treasury Department charged with the responsible and difficult task of determining the federal taxes on the great lumber industry of the nation. The equitable adjustment of income taxes in this industry has peculiar problems, and their wise solution means much to our forests. The work is now well organized, and Major Mason returns to his university duties in January, 1921.

In describing the California White and Sugar Pine Manufacturers' Association in the SIERRA CLUB BULLETIN of January, 1918, the statement is made: "Under unscrupulous management, it could be a powerful agent for unnecessary forest destruction. In good hands it can be one of the most effective of agents for perpetuating forests by proper use." Happily, and as was expected, the influence of this association has proved to be in the right direction. In 1920 it has been one of the most helpful factors in the work of the California Forestry Committee. It has gone on record in favor of a comprehensive slash-disposal law for California, and has indorsed the Graves-Greeley national program for forest legislation, described by Mr. Bruce in this issue. Because of the rapid increase in the number of forest fires immediately after the opening of the deer season, the association is endeavoring to bring about the postponement of the opening date for at least thirty days.

Shortage of fuel oil may mean more forest fires in California in 1921. In recent years the Forest Service has required the use of oil as fuel in all logging engines operating in national forest timber. Because of the shortage in oil supplies, it now appears improbable that this requirement can be continued. Many operators may have to go back to coal or wood, probably the latter, and wood fires in engines are notorious starters of woods fires outside, despite the best spark-arresters yet devised.

Jules Verne once more outdone! The exclamation is trite; the facts are not. Starting on June 1, 1919, as the first organized and sustained airplane forest fire patrol in the United States, and probably the first anywhere in the world, the airplane has taken on additional forest duties in 1920. This season the man-in-the-air has directed the crews at work on big fires, released men to fight on other fronts by patrolling completed fire lines which needed watching to see that the fire did not jump the lines, and met the need for experienced forest officers to lead the crews by moving them in a few hours from a portion of the state then free from fire to strenuous battle-fronts in other localities. In the Palm Cañon fire on the Cleveland Forest the local force attacked at once. But as soon as Supervisor Boulden arrived he took a ship over the fire, mapped out an entirely different campaign, and discharged most of the men. On the 12,000-acre Mill Creek fire on the Lassen Forest a portable radio receiving set was taken to the fire line by pack-horses. Fighting operations were then directed by radio from an airplane, and the same machine also patrolled fourteen miles of completed fire line, calling men to that district only when the line was in danger. In one storm, on August 4, 1920, lightning started more than 230 forest fires on the national forests within eleven counties of northern California. Many fire-fighters were quickly assembled, but the need of trained captains was great. Just then the Stanislaus Forest was quiet. Two trained Stanislaus men at once left Sonora for the landing-field at Cooperstown, were taken by the air patrol to Red Bluff, and sent out in another ship to lead the crews on a serious fire on the Lassen Forest. A few days later the situation changed. There was a break on the Stanislaus, and the men were back within the day.

Nine daily airplane-patrol routes were operated in California during the 1920 fire season. Three operated from Red Bluff: one to Alturas and return, covering the Lassen and Modoc forests and the eastern half of the Shasta; one to Montague and return on the coast slope, over the Klamath and Trinity forests and the western portion of the Shasta; the third patrolled the California Forest by way of Covelo and Lakeport. One of the two routes starting from Mather Field near Sacramento was to Red Bluff, over the Tahoe and Plumas and portions of the Eldorado and Lassen forests; the other, to Cooperstown, covered portions of the Eldorado and Stanislaus forests. From Fresno one plane operated north to Cooperstown over the Yosemite National Park and portions of the Sierra and Stanislaus forests, and another south to Bakersfield over the Sequoia Forest and the southern portion of the Sierra Forest. From March Field, near Riverside, one route covered the Cleveland and a portion of the Angeles Forest with a landing at San Diego; the other, landing at Santa Barbara, took care of the remainder of the Angeles and the Santa Barbara Forest.

The airplane work has been conducted by the Air Service branch of the army, at the request of and in co-operation with the United States Forest Service. The Forest Service has also continued to maintain regular fire lookout stations on nearly one hundred mountain peaks in California.

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Forest Service Notes

Law Enforcement.—Some three years ago the California District of the United States Forest Service started a vigorous campaign of law enforcement. Attention was concentrated the first year on fire cases, and the investigation of so many of the man-caused fires as it was possible to handle had such immediate and gratifying results that the activities of the so-called "Arson Squad" were widened, as time went on, to include property, grazing and other trespass, violations of the fish and game laws, etc.

For the calendar year 1920 the Forest Service reports a total of 278 law-enforcement cases. Of these 210 were for fire trespass, and of these 171 resulted in convictions, with fines or settlements of costs and damages totaling $7307.94.

As a consequence of this activity, incendiary fires at the present rate of decrease should soon be a thing of the past in the California District.

Air Patrol.—A total of 26 planes, 29 officers, 15 cadets, and an average of 92 enlisted men constituted the equipment and personnel for this work. In addition, 31 national forest officers participated in the work. During July, August, and September a total of 772 fires were reported by air patrol, and of this number 659 were first so reported. Detection accuracy was 79 per cent.

Educational Exhibits.—The year 1920 marks two new departures for the California District of the Forest Service in their educational exhibit work.

The first was the construction (and, later, exhibition at the State Fair, the Fresno District Fair, and the Southern California Fair) of a carefully planned and still more carefully executed replica of a camp-scene with painted background, with a built-up foreground blending imperceptibly into it. The planning, execution, and exhibition were all under the direction of Mr. Paul J. Fair, formerly of the California Academy of Sciences, but now engaged by the Forest Service.

The second departure was active participation in the visual educational work of the public schools. The Forest Service exhibit material was set up in a Los Angeles school and later in the Children's Hour room of the Public Library in San Francisco. At the latter place, and in co-operation with the Board of Education, over 6000 pupils of the sixth, seventh, and eighth grades, San Francisco public schools, visited the exhibit, saw the resources of the national forests, and had explained to them the relation of these resources to the economic life of the people of state and nation.

Present plans contemplate similar exhibits during the early spring, in co-operation with the school boards of Oakland, Alameda, and Berkeley.

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NOTES OF THE SOUTHERN CALIFORNIA SECTION OF THE SIERRA CLUB

The following officers and members of the Executive Committee for the Southern California Section of the Sierra Club have been elected to serve until November, 1922:

Charles J. Fox, Chairman.
Mrs. Mabelle McCalla Stocking, Secretary.
Benjamin W. Fenton, Treasurer, 949 N. Madison Ave., Pasadena.
George W. McDill, Los Angeles.
Ernest Dawson, Los Angeles.
Chester Versteeg, Los Angeles.
Miss Aurelia S. Harwood, Upland.
Miss Carrie Tracy, Los Angeles.
Miss Alice Bates, Los Angeles.

The Southern California Section has recently contributed $50 toward defraying expenses of the recently completed trail at the upper end of Arroyo Seco Cañon back of Pasadena.

The Southern Section is considering taking steps toward making a national monument of Palm Cañon, Andreas Cañon, and other native haunts of the Washingtonia Palm in the foothills of the Colorado Desert in Riverside County. Numerous private holdings are the chief obstacles in the way, as has been pointed out by Mr. Stephen T. Mather. Miss Aurelia S. Harwood, of Upland, California, is chairman of a committee appointed to investigate the whole matter.

Phil S. Bernays

BOOK REVIEWS

EDITED BY MARION RANDALL PARSONS

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MOUNTAIN MEMORIES[*] Sir Martin Conway, past-president of the English Alpine Club, has written in his *Mountain Memories* the romance of the mountains which always thrills the imagination of the mountain-lover. "Thirty years of mountaineering in all parts of the world may well be called a pilgrimage," and the author's subtitle, "A Pilgrimage of Romance," perfectly express the contents of his book.

"Mountaineering" to Sir Martin Conway was an expression of his life, and in writing of the experience which was his life he inevitably develops a philosophy, or, at least, a point of view, which perhaps only mountain-lovers, in whatever degree, can understand with sympathy.

This book is alive with the essential spirit of romance—the allure of the unknown and untried, the subtle charm lent by the imagination, the experiencing of the joy of discovery, which is the experiencing of a beauty first felt in the mind and heart of the discoverer. It is an evanescent spirit, perhaps. Seen too often, Sir Martin's mountains no longer kindle the romantic eagerness; knowledge takes its place—detailed, exact, valuable perhaps, but lacking the lovely colors of the romance-tinted first acquaintance.

Sir Martin in his quest first sought the Alps, then Kashmir and the Himalayas, later Spitzbergen, then the Andes and Fuegia. Everywhere he found the charm and beauty which he craved—and found it because he took it with him in his own heart.

The veteran author's memories are recounted with beauty and vividness, but they are memories which hold alive and bright only the essentials of experience—the happiness, the fancy, the emotion of it. Details of dates, distances, elevations—statistics of mountaineering—are few and incidental. Especially fine are a three-page memoir of A. F. Mummery, "a mountain genius," and the five chapters given to Kashmir and the Himalayas.

The book is splendidly done typographically, and the sixteen full-page illustrations are evidently chosen for their significance. A. H. A.

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BIRDS IN TOWN AND VILLAGE[†] W. H. Hudson's latest book, entitled *Birds in Town and Village,* is written in his usual delightful style. It gives something of the life habits of all the commoner birds of the British Isles—those that one may meet with in his daily walks—while he also includes intimate glimpses of those rarer birds which must be sought in out-of-the-way places. In his rambles he meets many interesting characters and sketches these with no less surety of touch. The bird-catchers include him as one of their own, telling him of their successes, the difficulties of the profession, and how much better it is for the birds! Hudson sees many evidences of the thieving small boy who robs the birds' nests—some for the sake of collecting eggs, others apparently actuated only by the destructive impulse. He feels the need of giving these children more knowledge of the birds, of their usefulness and beauty, thus trying to make of them protectors instead of destroyers of bird life.

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[*] *Mountain Memories: A Pilgrimage of Romance.* By SIR MARTIN CONWAY. Funk & Wagnalls Company, New York. 1920. Pages, 282; with 16 full-page plates. Price, $5.16; charges paid.

[†] *Birds in Town and Village.* By W. H. HUDSON. With pictures in color by E. J. Detmold. E. P. Dutton & Co., New York. Pages, 322.

He is much interested in the parental instinct shown by our feathered friends—how this prompts them to risk their own lives to protect their young, simulating broken wings and enfeebled condition, thus attracting the intruder's attention to themselves, and, by fluttering, slowly leading him away from the nest. He finds this instinct confined to no one species or order, but in many separate orders, evidenced by certain individual birds, but not by every bird of a species.

He discusses the migratory instinct which impels birds of so many widely varying orders to fly semiannually practically from pole to pole, thus distributing these birds more or less evenly all over the world.

His discussions are not scientific, but perhaps are all the more interesting to the lay-reader because of their general discursiveness. Anyone can enjoy these delightful ramblings through these quaint old English villages.

MARY VAN E. FERGUSON

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ADVENTURES AMONG BIRDS* In *Adventures Among Birds* Mr. Hudson paints a series of beautiful word-pictures of his feathered friends. Being neither a sportsman, a collector, nor a photographer of wild life, he has but one aim—to make himself so familiar with the bird in its "wild, free, happy existence" that he may be able to impart to his readers an image, not so much of its physical appearance as of the expression of its inner life as manifested in song, flight, and social habits. These images are interwoven with human experiences and descriptions of scenery which leave an indelible impression on the reader's mind.

With fine descriptive power he paints the wild geese and hooded crows seen at Wells-next-the-Sea, the cuckoos and meadow pipits on the moors in Derbyshire, the nightingales, blackbirds, skylarks, and marsh warblers (the four greatest British songsters) on the green downs in Hampshire and Gloucestershire, the carrion-crows, sparrow-hawks, and long-eared owls on the forest-crowned hills of the Wiltshire downs.

Other chapters especially interesting to the animal psychologist are entitled "Great Bird Gatherings," "Birds in Authority," "Friendship among Animals," and "Bird Music." Many incidents connected with the writer's early life in South America are scattered through the pages of the book.

Most American bird-lovers are in the habit of thinking of England as a haven for wild birds—an indirect result of the system of preserves for the exotic pheasant. But, according to Mr. Hudson, England is now but a "glorified poultry-yard" in which the native species are slaughtered as vermin by ignorant gamekeepers, who would even do away with the nightingales on the ground that they disturb the slumbers of the "sacred bird" at night.

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* *Adventures Among Birds.* By W. H. HUDSON. E. P. Dutton & Co., New York. 1920. Pages, 314.

The reviewer always finds pleasure and profit in reading Mr. Hudson's books, for he is a naturalist who succeeds in communicating to his readers the thrills he himself experiences in the field. AMELIA S. ALLEN

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MOUNTAIN CRAFT* This book was obviously prepared before the war, for it is written with a minuteness and thoroughness that could only have been exercised in those days when patience had a chance in the world.

Anyone planning a mountain trip in the Alps, or in any other range where real difficulties of snow and ice or rock-climbing prevail, should consult this book and make careful note of its wealth of suggestions and commit to memory many of its precepts.

The point of view is essentially that of the Alpine climber, however, and the editor often lays emphasis upon matters that climbers in our American mountains either take for granted or ignore. In the Sierra, of course, we are almost entirely free from the dangers of storms and changing weather. Such storms as we have are over so quickly and are of such little consequence that the mountaineer pays little attention to them. But for this very reason a Sierra climber contemplating a trip to any other portion of the world would do well to study particularly the warnings contained in this book.

For its purpose this book is admirable and should be in the library of every mountaineer. Many of the chapters, particularly that on rock-climbing, contain most valuable suggestions applicable to our own mountains. F. P. F.

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A TOUR OF AMERICA'S NATIONAL PARKS† This is a good book. It will doubtless fulfill the purpose for which it was written—to attract tourists to our national parks. A book with such a purpose should be interesting in substance, racy in style. It is not for the geologist, the botanist, or the mountaineer. It is for Mr. Plain People and Wife who have had a little windfall and wish to know where they can spend the money with most profit and delight. Colonel Reik answers their questions deftly. He shows them a number of good pictures, beginning with a very colorful autochrome. He informs them concerning the hotels, the camps, the trails. He entices them with accounts of glorious waters, soaring peaks, and miraculous geysers. Here a little geology, there a little dendrology—but he will not satisfy the scientist at the risk of wearying the retired banker. As his own style is not that of a Parkman or a Muir, he opens each chapter with a bit of verse and seasons his text with apt quotations. And enclosing all his information and divertisement the author has placed on the inside of the covers duplicate maps of the parks and railway connections—a practical and happy consummation of a very worthy work.

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* *Mountain Craft.* Edited by GEOFFREY WINTHROP YOUNG. Charles Scribner's Sons, New York. 1920. Price, $7.50.

† *A Tour of America's National Parks.* By HENRY OTTRIDGE REIK, Lieutenant-Colonel, Medical Corps, United States Army. E. P. Dutton & Co., New York. Price, $4.00 net.

Members of the Sierra Club will derive special pleasure from the introduction, which is written by their fellow-member, Horace M. Albright, who is now director of Yellowstone Park. C. N. H.

⁂

A CITY OF CAPRICE* The heart thrills to home-made songs even if the singer sing with voice somewhat uncertain. This book of verse should interest every San Franciscan who glances at the table of contents—"Land's End," "New Year's Eve," "Telegraph Hill," "In Sanguinetti's," "The Legend of Tamalpais," etc., etc. The poems are of unequal merit.. Three of them, written at Yale, which include a prize poem, might, we think, be omitted with profit. If the author should ever abandon his present tasks for poetry (he is an advertising manager), we suggest that he follow *vers de société*. In lighter vein he is certainly not without charm. C. N. H.

⁂

USEFUL WILD PLANTS OF THE UNITED STATES AND CANADA† In Charles Francis Saunders' latest book, *Useful Wild Plants,* we find something of a departure from his usual books. Several of those we have seen are delightful ramblings throughout California, making us acquainted with the trees and flowers as we go, or, as in one, a guide-book to the points of interest in California. Here, however, we have a guide-book to the useful and edible plants. He gives us something of the history of these plants—where found, the use made of them by early explorers, and the uses made of them by the Indians. Many a plant which we would pass by unnoticed proves upon expert examination to have been of incalculable value to the native inhabitant. In some plants the tubers are edible, by boiling or baking; in others the seeds are used, being sometimes eaten raw, or in other cases pounded into a flour and made into mush or baked in cakes. Again, we discover many uses for the fruits which have been so little regarded by the white man, or it is the stems and leaves which are of use in the commissary, and last, but not least, the so-called "beverage plants"—and some lively beverages were concocted from these for the delectation of the palate of the red man. Then there were plants used exclusively for medical purposes, first by the natives in the early days, and some of them later to be found in our own Materia Medica.

Our only criticism of this delightfully interesting book would be that a complete bibliography should have been added instead of the occasional foot-notes, which make the references difficult to locate. MARY VAN E. FERGUSON

---

* *A City of Caprice.* By NEILL COMPTON WILSON. The Overland Publishing Company, San Francisco.

† *Useful Wild Plants of the United States and Canada.* By CHARLES FRANCIS SAUNDERS. Illustrated by photographs and numerous line drawings by Lucy Hamilton Aring. Robert M. McBride & Co., New York. 1920. Pages, 274. Price, $3.00 net.

Going Afoot* A handbook on how, when, and where to walk. One chapter is devoted to the various mountaineering and walking clubs of America, another to the organization of new clubs. A bibliography of mountaineering journals and books on the open road is appended. M. R. P.

⁂

Winter Sports Verse† It is a far cry from Shakespeare to Amy Lowell, from the icicle hanging on the wall to the ski-song of the Braemar postman. Wordsworth, defining poetry, says it is emotion remembered in tranquillity. For the ski-runner, says Walter Pritchard Eaton in his clever introduction, "remembering in tranquillity the emotion of his descent . . . is more likely to burst into laughter than into poetry." Nevertheless, he reminds us, "they have a lonely side, a still, reflective side," not inappropriate to the poet's attention. The work of both familiar and unfamiliar poets is included in this novel collection. M. R. P.

⁂

Guide to Yosemite‡ This little guide-book by Ansell F. Hall introduces the traveler most charmingly to Yosemite Park. Even its mass of practical information cannot hide Mr. Hall's love for his subject. It includes an account of the origin and early history of Yosemite Valley and Park, and a description of the roads and trails which lead to its most famous features. The trips are described, mileage given, and the estimated number of hours necessary to cover the trip. We recommend the book unreservedly to our members. It is issued in pocket size with durable paper cover. M. R. P.

⁂

New Mexico, the Land of the Delight-Makers§ *New Mexico, the Land of the Delight-Makers* is the title of a 460-page volume by George Wharton James, whose purpose, in his own words, "is to give in readable guise a broad and general idea of the state as a whole, or, at least, of its more important and arresting features." An acknowledgment, in the first paragraph, to Adolph Bandelier for the use of the name "The Delight-Makers," the title given by Bandelier to the novel in which he sets forth the significance of the cliff dwellings of this region and his profound knowledge of the country, people, customs, etc., reduces the shock which one otherwise feels upon finding an apt and well-known title made use of by another author.

The book is one of the "See America First" series, to which James has already contributed a volume on California and one on Arizona. He first visited New Mexico some thirty years ago, "broken," as he says, "in health and spirits," and found in the free and wild life there—the broad expanse of hill and plain, the extremes of heat and cold, wind and weather, the color of its sunrises and sunsets, and the interest in its customs and Indian life, in contrast to its modern cities—an awakening and broadening sense of what life holds for one who has eyes to see.

---

* *Going Afoot.* By Bayard H. Christy. Association Press, New York. 1920. Pages, 148.

† *Winter Sports Verse.* Chosen by William Haynes and Joseph Le Roy Harrison. With an introduction by Walter Pritchard Eaton. Duffield & Co., New York. 1919. Pages, 258.

‡ *Guide to Yosemite.* By Ansell F. Hall, U. S. National Park Service. Sunset Publishing House, San Francisco. Pages, 98. Price, 50 cents.

§ *New Mexico, the Land of the Delight-Makers.* By George Wharton James. Page Company, Boston. Price, $5.00.

It is with something of this vision that the author attempts to inspire the reader and to lure him from the commonplace happenings and surroundings of his daily life to this land of constant surprises.

He goes rather broadly into New Mexico's historical beginnings, religion and superstitions, its art, architecture, music, flora, bird life, etc., and closes the volume with a chapter on "Albuquerque, the Commercial Metropolis" and some statistics on population. The descriptions are prolific in adjectives and the book is written in George Wharton James' usual digressive style.

DAISYMAY CAMPBELL HUBER

∴

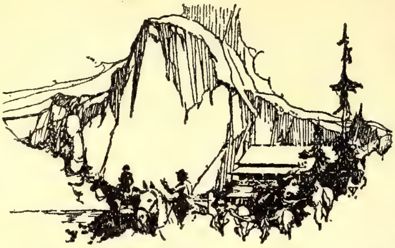
The annuals of *Mazazma* and *The Mountaineer* maintain their usual high standard. *Mazama* includes articles on Mount Baker, Mount Shuksan, Mount Shasta, Assiniboine, and the Sierra Club outing. *The Mountaineer* is devoted chiefly to Mount Olympus and Mount Anderson. M. R. P.

∴

Publications received too late for review:

Popular Studies of California Wild Flowers. By BERTHA M. RICE and ROLAND RICE. Illustrated from photographs. Upton Bros. & Delzelle, San Francisco.

Cross-Country Skiing. By ARNOLD LUNN. With diagrams and illustrations. E. P. Dutton Co., New York.



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VOLUME XI NUMBER 3

SAN FRANCISCO
1922

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BANNER PEAK FROM GARNET LAKE
Photo by Marion Randall Parsons

SIERRA CLUB BULLETIN

VOLUME XI NUMBER 3

SAN FRANCISCO
1922

HALEAKALA AND KILAUEA

By William Frederic Badè

IN the literature of adventure and romance few places on earth hold so prominent a place as the Hawaiian Islands. Situated on the crossroads of the Pacific more than two thousand miles from San Francisco, the nearest large mainland port, their remoteness and geographical isolation, as well as the rather unique characteristics of their flora, avifauna, and native inhabitants, have made them equally attractive to the traveler and to the scientist. Superadded to these items of interest are remarkable phenomena of volcanism both vestigial and in process. Within the environs of Honolulu on the island of Oahu are Diamond Head and Punchbowl Hill, which are tuff-cones with well-marked craters at their summits. A little farther away is Koko Head, another dead crater. On the island of Maui stands Haleakala, with the largest* crater in the world, also extinct, while the island of Hawaii has long been famous for its active volcanoes, Kilauea and Mauna Loa. The former is constantly active, while the latter, often erupting subterraneously into the sea, broke into visible and spectacular activity again in 1914 and 1916. In short, the Hawaiian Islands are of volcanic origin and have been built up by eruptive process from a base more than fifteen thousand feet below the level of the Pacific. If there were no water and one could approach the island of Hawaii across the oceanic plain, Mauna Loa and Mauna Kea would be seen to rise from their submarine base to a height* of nearly six miles—a relief which exceeds that of Mount Everest.

---

*Unless the huge oval depression (area, 100 sq. m.) of Aso-san on the island of Kiushiu, Japan, is to be regarded as a crater.

In the month of June, 1921, it was my pleasure to visit the Hawaiian Islands and to remain there about two and a half months. June is in an unusual degree the blossom-time of the Hawaiian year, and one is tempted to linger over a description of the great flame-colored crowns of the *Poinciana regia* trees, the Golden Shower (*Cassia fistula*), with its handsome fragrant masses of yellow flowers, the bewildering blossom variety of the omnipresent Hibiscus, or the bewitching beauty of a quarter-mile of cactus hedge composed of the night-blooming Cereus (*Cereus triangularis*), with thousands of the giant creamy-white blossoms opening simultaneously under the southern moon. It might be interesting also to tell of an excursion up the Waialaiiki Cañon in search of species of the beautiful tree-dwelling land-snails of the genus *Achatinella*. This excursion was made under the auspices of my friend Joseph S. Emerson, whose collection of these shells is one of the finest in the islands.

But my purpose in this article is to recount my climbing experience on only two of the Hawaiian volcanoes—Haleakala and Kilauea. Therefore, I must content myself with merely mentioning an interesting trip taken on the island of Oahu, July 11th, with the members of the Hawaiian Trail and Mountain Club. Under the guidance of Lawrence D. Daingerfield, sturdy lover of the outdoors, I that day had the pleasure of scrambling to the summits of Olympus and Konahuanui (3015 ft.), the latter the highest peak of the Koolau Range. These were good preparatory experiences for the ascent of Haleakala on the island of Maui, for which I departed from Honolulu on the little interisland steamer "Kilauea" on the evening of July 25th, arriving the next morning in the harbor of Kahului.

The start for the ascent of Haleakala is usually made from a place called Olinda, which lies at an altitude of a little more than four thousand feet on the northwestern flank of the old fire moun-

---

*The average depth of the Pacific around the Hawaiian archipelago is about 17,500 feet. In the Renard deep, one hundred and thirty-five miles northeast of Hawaii, the ocean floor descends to a depth of 24,000 feet. Consequently the total relief of Mauna Kea and Mauna Loa above this deep is in the vicinity of 38,000 feet, or more than seven miles. Cf. Jaggar, T. A., "Seismometric Investigation of the Hawaiian Lava Column," *Bull. of the Seismological Society of America*, vol. X, No. 4, 1920.

tain. During the days preceding our expedition I had often studied the long gradual slope of the mountain as it swept upward in an easy curve from sea-level at Kahului. When far up in the blue that curve was intersected by lofty ranks of cumulus clouds, above which the colossal hulk still continued to rise, the beholder gained a rather vivid impression both of distance and of height. There is, in fact, an air-line interval of about fifteen miles between Kahului and Olinda which one is quite content to cover by auto. The distance from Olinda to the summit is another air-line interval of about five or six miles, which is increased to about eight miles by the meandering trail, whose vertical ascent in that distance is about six thousand feet.

After a night spent at the comfortable parsonage of the Makawao Church on the northwestern instep of the mountain we motored to Olinda. Our party was to have consisted of at least four men, but unforeseen occurrences diminished it until only George H. DeKay and myself were left. The first day's trip to the summit, however, was shared also by a Mr. Wedberg. It should be observed that a knapsack trip in the Hawaiian Islands is very different from one in the High Sierra. A far greater concern than food is an adequate supply of water, which has to be carried in capacious canteens, and is one of the things that taxes a hiker's transportation ability.

Adjusting our packs at Olinda, we trudged upward along a cattle-trail that disappeared in a bank of clouds about two thousand feet above us. Before long the dense white masses of cumulus were sweeping all about us; the cattle trail, splintering into a dozen paths, radiated into them in all directions, and after some speculation as to the right one it was decided to trust our compass and instinct as to the general direction and make a frontal attack on the mountain. Flurries of rain, alternating with bursts of brilliant sunshine when the trade-wind tore rifts in the cloud canopy, made every moment interesting with a shifting panorama. Far down on the isthmus between East and West Maui could be seen the town of Wailuku nestling among sugar and pineapple plantations. Beyond the isthmus Puu Kukui (5788 ft.), the highest peak of West Maui, held its summit on a level with our early forenoon position, and to the left of it could be seen the deep gash of the famous Iao Valley, which residents of Maui like to compare with Yosemite. It is an erosion gulch cut into the flanks of the West Maui Mountains by the heavy rains which the trade-winds unload when they strike this mountain barrier athwart their path.

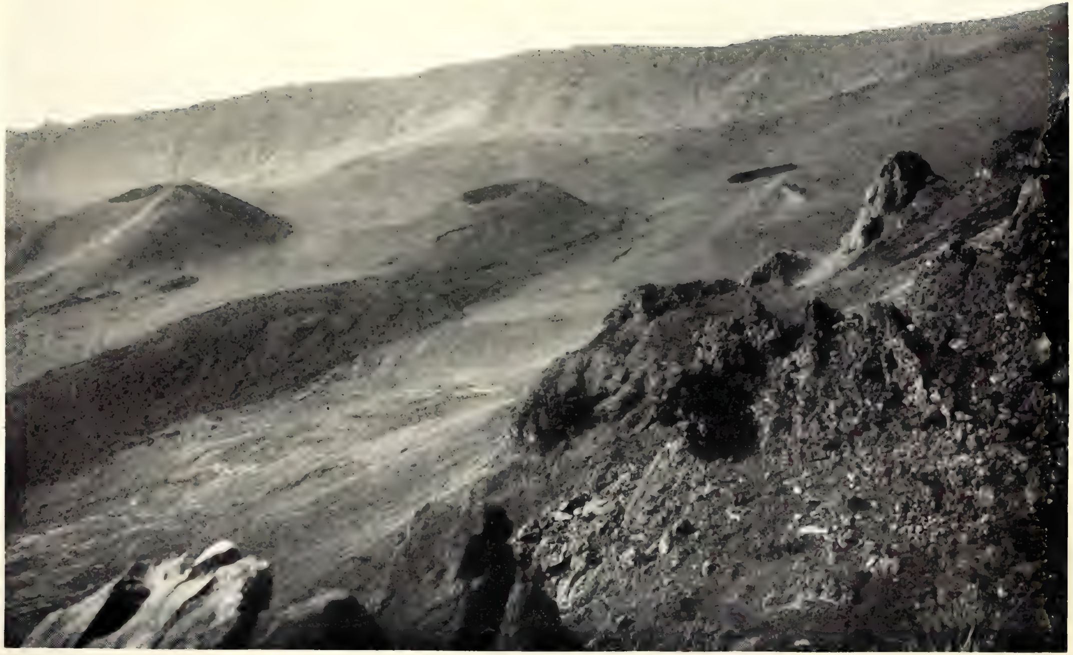
It was strenuous and hot work—this scramble over weathered lava flows. Being on the leeward side of the mountain, the vegetation through which we made our way was mostly scrubby xerophytic chaparral, the kind that grows on dry lava-fields. Of this, even, only such species survive as are obnoxious to cattle. Island botanists tell me that the north and west slopes of Haleakala scarcely exhibit a hint now of the varied and interesting flora that clothed the Kula side of the mountain before the introduction of cattle.

Since we were planning to spend the night on the summit, there was no need of hurry, and we enjoyed to the full the occasions when the clouds parted and the world below came into view. Then a whole county, diversified with hills and valleys, woods and plantations, appeared to be leaning on its elbows, looking out upon the blue Pacific. Far away the summits of West Maui could be seen rising above the cloud-bank, encouraging the illusion that they were floating upon it. And always, wherever and whenever the cloud-curtains parted, the vast mysterious immensity of the blue Pacific met the softer blue of a South Sea horizon.

About six o'clock found us on the summit and on the rim of the abyssal pit-crater. It was the right time for a view of the chasm that must impress even a Dantean imagination and cling to one's memory for a lifetime. Mere figures of dimensions seem bald beside the stupendous reality that yawned there at our feet. But figures and comparisons may help the reader, with the aid of the accompanying pictures, to arrive at some conception of this volcanic phenomenon.

The crater is of an irregular triangular form, due to the fact that during the last summit eruption, whose date is too remote to be remembered in Hawaiian tradition, the mountain was fractured across the summit, permitting the lava to flow to the sea through two enormous gaps on opposite sides of the crater. The latter has a diameter of seven and a half (7.48) miles in one direction and about two and a half (2.37) miles in another. Measured about the rim, it has a circumference of twenty miles and its extreme depth is two thousand five hundred and ninety-two feet. If the whole of San Francisco were put into this chasm it would not nearly cover its floor—a quarter of a mile below!

SUNSET FROM HALEAKALA, BETWEEN TWO CLOUD-LEVELS
Island of Molokai seen in the distance



CINDER-CONES IN THE CRATER OF HALEAKALA

It is difficult for a beholder to describe his first impressions of such a scene. The sun was just sinking into the western ocean behind cloud-banks that were breaking its light into shafts of gold and scarlet. Out of the nearly total darkness at the bottom of the yawning gulf rose the summits of numerous cinder-cones where the receding volcanic fires in the crater had thrown up loose scoria and sand, building up perfect cones with small craters at their summits. They looked from our elevated stations like ant-hills floating upon darkness. The next day, as we threaded our way among them, they proved to be from four hundred to nine hundred feet in height. As the sun sank to the verge of the western ocean the sea of darkness gradually rose from the bottom of the pit, engulfing the summits of the cones until only vague outlines were perceptible. Then great cloud-masses streamed into the crater through the Koolau Gap and sent long white streamers across the black abyss below, while our shadows, magnified into gigantic proportions, reflected our movements in grotesque antics upon the abysmal screen.

We had discovered upon our arrival at the edge of the crater that the stone rest-house where we expected to spend the night was two miles or more farther to the north and that we had to make quick time in order to reach it before dark. We therefore had opportunity to observe the conflict between light and darkness in the maw of the dead volcano as we were hastily scrambling along the crater-edge to reach our shelter. Success rewarded our exertions just as the sun disappeared in a gorgeous splash of crimson and gold beneath the waves of the Pacific. Part of the stupendous sunset spectacle, in the opposite direction, were the massive twin domes of Mauna Kea (13,825 ft.) and Mauna Loa (13,675 ft.) on the island of Hawaii. Across more than a hundred miles of blue ocean they could be plainly seen on the southeastern horizon. Westward the islands of Molokai, Lanai, and Kahoolawe were playing hide-and-seek under gigantic tumbling masses of cumulus, reddening in the sunset.

The rest-house is a thick-walled, oblong stone-and-concrete cabin on the very edge of the precipice formed by the inner wall of the crater on its northwestern rim. While we were slaking our thirst from a rain-water cistern and were preparing a hasty supper on a stove that poured suffocating volumes of smoke into the room, the Southern Cross rose out of the waste of waters on the southern horizon, and the increasing wind dashed waves of fleecy white clouds over the reef-like promontories of our mountain world, to be followed speedily by inky darkness and a chilling temperature. The roaring of the trade-winds outside only made more comfortable the warm blankets on the iron bunk-beds.

The crack of dawn found us astir next morning, for the most strenuous and adventurous part of our program was before us. Our goal that day was Kaupo, a place in the jungle on the southeastern side of Maui, whither mail penetrated perhaps once a week if the elements permitted. This meant a descent of two thousand feet into the crater, a traverse of seven miles along the axis of greatest length, emergence through the Kaupo Gap, and a long descent over ancient lava flows—about nineteen miles of foot travel and a total descent of eighty-six hundred feet. Through the half-open door I kept an eye upon the reddening dawn, and when I judged the sun was about to appear I stepped out. It was a wonderful spectacle. A sea of clouds spread below us and all around. In a moment the sun emerged above them and flooded them with golden glory. Down below, in the chasm of the crater, unseen fingers were weaving strange tapestries of color down the fire-baked sides of the crater precipices. If this was the "House of the Sun," as some interpret the name Haleakala, the sun was taking pains to adorn it. The silence of the crater's depths seemed in strange contrast to the imaginable roar of the volcanic forges that, according to most impressive evidence, had in geologically recent times blown the mountain and the island asunder, opening for the lava two gigantic gateways to the sea. Great fleecy clouds kept creeping up over the Koolau lava-fields into the mouth of the Koolau Gap. But something turned them back at the verge of the main crater. The chasm generates its own winds, and some of them were beating back the intruders.

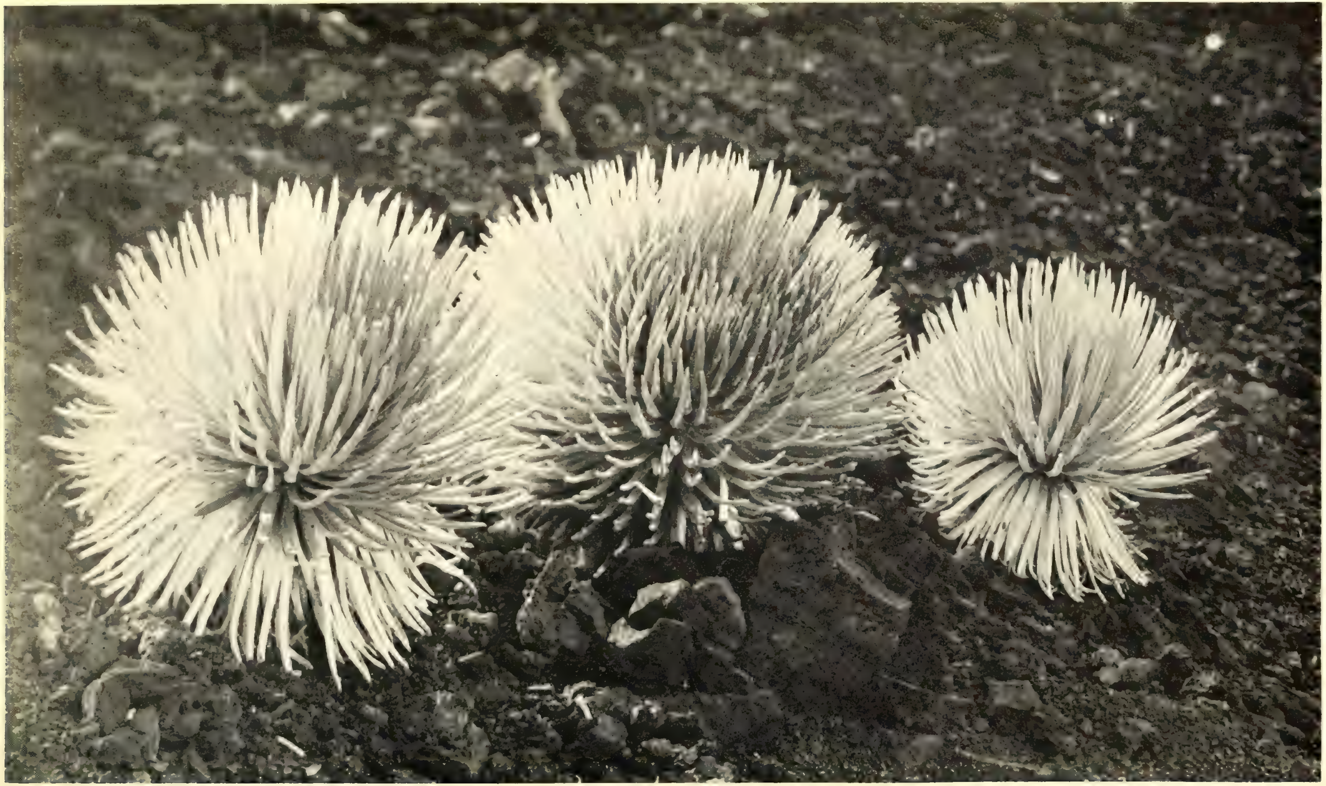
The morning was still young when Wedberg turned back on the home trail, while G. D. K. and I, with our canteens filled and our packs adjusted, retraced two miles of our previous evening's scramble along the rim of the crater to a point where a trail descends into it. Immense slopes of loose, dry volcanic sand made the descent a matter of sliding rather than walking. The cinder-cones are composed of the same loose material, hanging at an angle of repose that would enable a beetle to start an avalanche. Nevertheless, we clambered to the top of one and found a funnel-form baby crater thirty or more feet in depth. In some of these cinder-cone craters have been found evidences of human occupation. But what may have induced human beings to seek habitations amid such weird desolation is difficult to surmise.

A strange and curious plant is almost the only living thing that finds the crater a congenial environment. It goes by the name of Silversword (*Argyroxiphium*), in allusion to its leaves, which resemble silvery daggers set in spiral array around a stout woody stem. They are from eight to eighteen inches long, and their glistening appearance is due to a dense covering of appressed silky hair, evidently a protection against too great a loss of moisture in its extremely arid habitat. The large flower-heads with their yellow disks and rose-purple rays are striking objects of beauty and of interest; so much so, indeed, that the time has come when the island authorities ought to prohibit the gathering of it both by residents and by tourists. Curiously enough, the plant constitutes a genus of the composites whose nearest relatives are found among the tribe of the *Madieae,* or Tarweeds, of California. There are two species, *A. Sandwicense* and *A. virescens,* and both of them are not only peculiar to the Hawaiian Islands, but are extremely restricted even there, for they occur only on the summits of Haleakala, Mauna Kea, Mauna Loa, and Hualalai. Competent observers declare that they are becoming markedly scarce in some of these habitats, for flocks of domestic goats, gone wild, are filling their worthless hides with them, and climbers often strew the trails with the glistening wreckage of ruthlessly torn-up Ahinahina, as the natives call the Silversword. Now that a strip of the crater of Haleakala is part of the Hawaii National Park, a little co-operation between the National Park Service and the local territorial authorities might secure the extermination of the goats and the enactment of a law against the picking and uprooting of this singular and interesting plant.

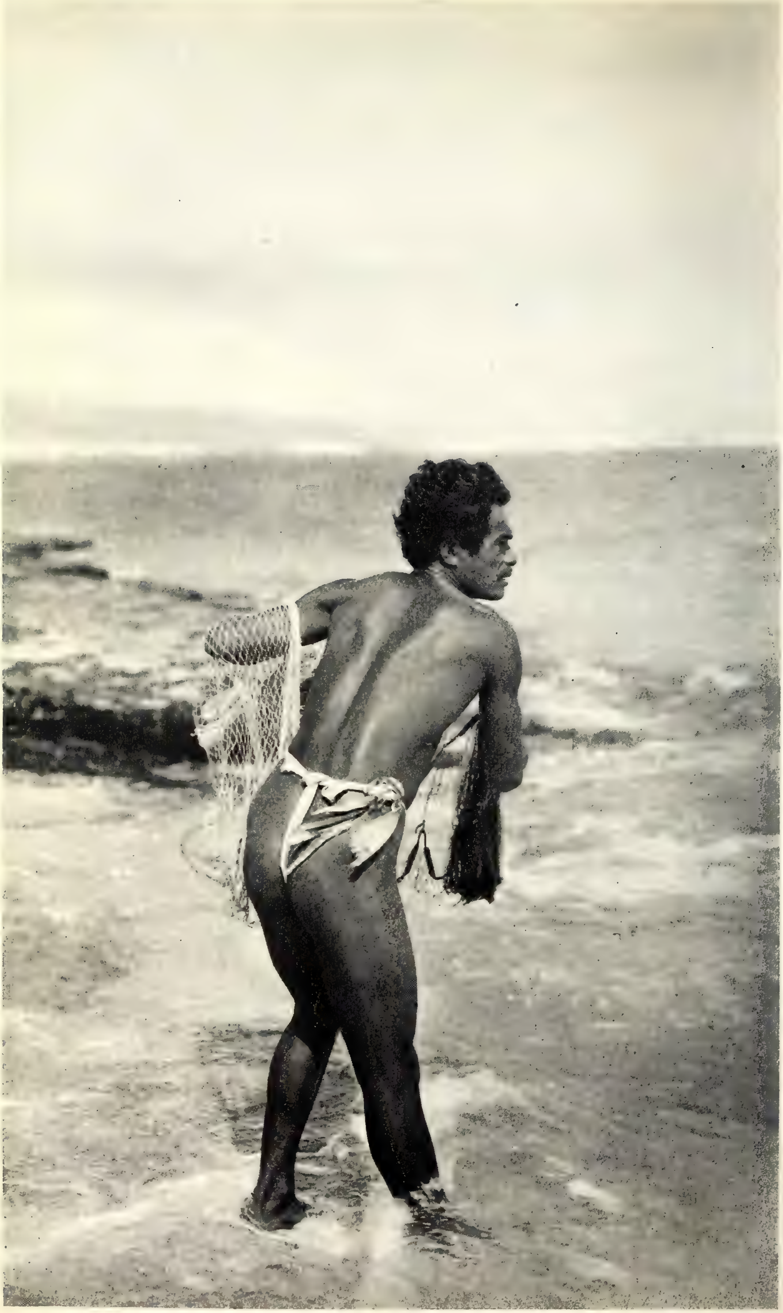
But I must resume the story of our progress through the crater, which has many natural wonders that tempt the visitor to linger. A partially filled crater within the crater goes under the name of Pele's Pigpen; other features are Hunter's Cave, Crystal Cave, the Chimneys, and the Natural Bridge. Of greatest interest probably is the so-called Bottomless Pit, a volcanic blow-hole about whose depth there is much contradictory testimony. A precisely similar hole on Hualalai is twenty feet in diameter and four hundred feet deep. After threading our way for two hours or more among the cinder-cones and along the crater-walls of this inferno we reached the gigantic opening of the Kaupo Gap through which continental masses of lava left the crater and flowed fan-shape down to the sea. We were now edging toward the windward side of Maui where the trade-winds, cooled by the upper reaches of the mountain, condense their moisture into clouds that drench the slopes with a constant succession of showers. As we entered the gateway of the gap cloud-masses closed down over us, leaving to view nothing but vertical precipices on either side, reaching up mysteriously into the white mist, while the opening in front revealed, far down, shimmering patches of the Pacific. Many of the precipices were festooned with long slender waterfalls which came and went with cloudburst-like showers that fell on plateaus to the windward of us. Here and there were encountered flocks of wild goats which have learned the art of tripping lightly over the roughest lava-fields. They are a pest to the cattlemen and generally play the part of hoofed locusts. This explains why sometimes part of a flock was found massacred without attempt to use meat or hide.

All afternoon we kept going down over lava-benches, down over sand-fans and terraced meadows, down through watercourses and gullies walled with lava. The trail itself was incredibly rough and difficult—and deadly for pack-animals, as an occasional bleaching skeleton testified. Eight thousand feet of continuous descent of this type in twenty miles is a severe test of leg-muscles, and the walker who accomplishes it successfully between sunrise and sunset is entitled to regard himself as fit.

As we emerged about sunset from dense lantana thickets into grassy openings whence scattered ranch-houses could be seen far down along the seashore, we experienced a sense of satisfaction and relief. The scattering of native houses could hardly be called a settlement, but it was Kaupo, the namesake of the volcanic gap and the goal of our striving. With my field-glasses I descried a cottage that was not far below us and that seemed to hold promise of shelter for the night. Upon making known our needs to the owners, we met with a hospitable reception—and an abundant supply of cold water to slake our burning thirst. The Marciel family proved interesting from several points of view. Its founder, a white-haired Portuguese patriarch of more than fourscore years, was still living and filling his place at the head of the long family table. Thirty-six years ago



YOUNG PLANTS OF THE SILVERSWORD
Photo by Ray J. Baker



NATIVE HAWAIIAN, WITH CAST-NET POISED
Photo by Ray J. Baker

he had come to this wilderness, married a native Hawaiian woman, and engaged in cattle-raising. Now the eldest offspring of this union, a husky son of the lariat, was in charge of the ranges. He in turn had married a handsome Chinese-Hawaiian woman, who was now the mother of a comely brood of boys and girls, in whom were mingled in various proportions the strains of three races. The Hawaiian love of music and song, however, had not been altered in the blend, for the plaintive strains of Hawaiian melodies accompanied by ukuleles and guitars came floating up from huts among the guava thickets until far into the night. A number of comely young girls of mixed Hawaiian ancestry, evidently visitors, may have been the inspiration of the music.

We were made welcome at the family table, and the food set before us was interesting. Lamb stew, rice, yams, ham, eggs, pancakes, and honey formed the main part. Native coffee and tea were served to the guests in cups, but the host and his family drank from large shallow bowls. Inquiry brought out the fact that papayas, abundant here, are not eaten by mixed Hawaiians, but are fed to the pigs. The cooking was good, and mountain appetites did the rest. A guest-cottage was prepared for our accommodation, and we soon were sleeping off our fatigue in preparation for another day's journey.

Wheeled vehicles seem to be unknown in the Kaupo region, for there are no roads of any sort. All travel and intercommunication is by horseback and muleback over bridle-paths that often are extremely picturesque. This is particularly true of the eight miles of trail from Kaupo to Kipahulu, and since we had before us an uncommonly long day's journey we decided to travel to Kipahulu on muleback. In view of what the trail actually proved to be, it was a satisfaction to find ourselves mounted on a very cautious and sure-footed pair of mules. A handsome brown Adonis, scarcely more than twelve years old and covered by an immense gaily corded lauhala hat, was appointed our guide, and the gaze of many wistful dark eyes followed us down the trail into the dewy morning.

Of all the paths that ever were hung between the mountains and the sea, surely few can boast a greater variety of wild natural beauty than that which borders the trail to Kipahulu. This trail is carved in sharp zigzags up and down the sides of steep-walled gorges of great depth, clothed with most luxuriant tropical vegetation. There was many a turn that tested the rider's confidence in his mount, for when, in descending, the mule's ears got on a level with the hoofs of his front feet, and there was a drop of several hundred feet beyond the outer edge of the trail, the instinct of self-preservation took most of the humor out of the situation. The up-grades did not seem quite so full of sinister possibilities, for the chance of staying on the trail seemed better in sliding off a mule's back to rearward than when tobogganing down through the gap between his ears.

These gulches are like nothing I have ever seen anywhere else. Torrential rains have cut them out of the flanks of the great lava mountain, and their abruptness is such that one has to cross two or three in every mile of distance. At the bottom there usually is a torrent which has to be forded, and the mouth of the gorge invariably debouches sharply into the sea, forming a miniature cove. As the surf pounds into these little coves it rolls the rounded rocks and pebbles along the shelving bottom with an indescribable muffled roar like distant thunder. The head of one of these gorges was enclosed by a crescent of Yosemite-like walls from which a dozen waterfalls were pouring. Their sources were in clouds that swirled above them, constantly dissipating in rain and as constantly renewed by condensation from the moisture-laden trade-winds. At the ocean end of the gorge a river of considerable volume poured into a sea-cove surrounded by verdure-clad cliffs. Such coves are the native fisherman's paradise. There at opportune times one may find some brown Apollo standing like a statue, with his cast-net poised, intently watching the surface of the heaving sea. When by signs, which no one but a Hawaiian seems able to recognize, he judges that his quarry is within reach, out flies the net and he is not often disappointed in his haul.

The vegetation, also, of this region testifies to the ease with which human life may be supported here amid idyllic surroundings. Little groves of Puhala (*Pandanus odoratissimus*) were constantly encountered along the trail. The male and female trees grow separately, and the flowers of the former, called *Hinano Hala* by the natives, are very fragrant. They make handsome mats and hats out of the leaves, while the extremely hard and exquisitely beautiful wood is used for many purposes. A little banana-grove and taro-patch always was an indication of a native hut hidden somewhere under tropical foliage. The refreshing pale-yellow fruit of the lemon guava could be picked from horseback everywhere along the trail.

Most interesting of all were the Mountain Apple trees (*Jambosa Malaccensis*), which usually were encountered along the streams at the bottom of the gorges. The natives call it *Ohia ai,* and it does not belong to the apple family at all, but to the myrtles. To see one of these trees, fifty or more feet high, densely loaded with the deep-crimson fruit is to have a brand-new wilderness experience. The mountain apple, two inches in diameter, is nearly all juice, and when eaten on a hot day has a grateful cooling effect. The fruit is much prized by the natives, and G. D. K. and I also found it, like Eve of old, not only "pleasant to the eyes," but to be desired to make one cool and comfortable, if not "wise."

Beyond Kipahulu and Hana we took to walking again, this time over the first lap of the famous Ditch Trail. All afternoon we trudged through a steady, drenching tropical rain. There were roaring streams and waterfalls everywhere, framed and canopied by luxuriant vegetation. In the evening we arrived at the hospitable home of John Plunkett, overseer of the intricate irrigation system by which the water of the rainy side of Maui is distributed to more arid agricultural areas on the other side of the island. Still another day of walking was required to bring us back to roads, automobiles, and civilization. But the numerous interesting experiences of these last days must vacate the record for Kilauea.

On the third of August I took the steamer at Lahaina, Maui, for Hilo on the island of Hawaii. The latter city, beautifully situated on the palm-girt Bay of Hilo, which cuts a deep notch into the eastern side of the island, is connected by a much improvable thirty-mile auto road with Volcano House and the Volcano Observatory, both of them perched on the edge of the crater of Kilauea. The latter forms a part of the northeastern slope of Mauna Loa and lies at an altitude of four thousand feet above sea-level. The main crater is about three miles long and two miles wide. It is a huge lava-covered pit with walls five hundred feet high on the Volcano House side. The fire-pit Halemaumau might be described as a crater within the larger crater. As a rule, one can walk to the very edge of this live pit and watch its ever-changing lakes of fiery lava—one of the most awe-inspiring sights in the world.

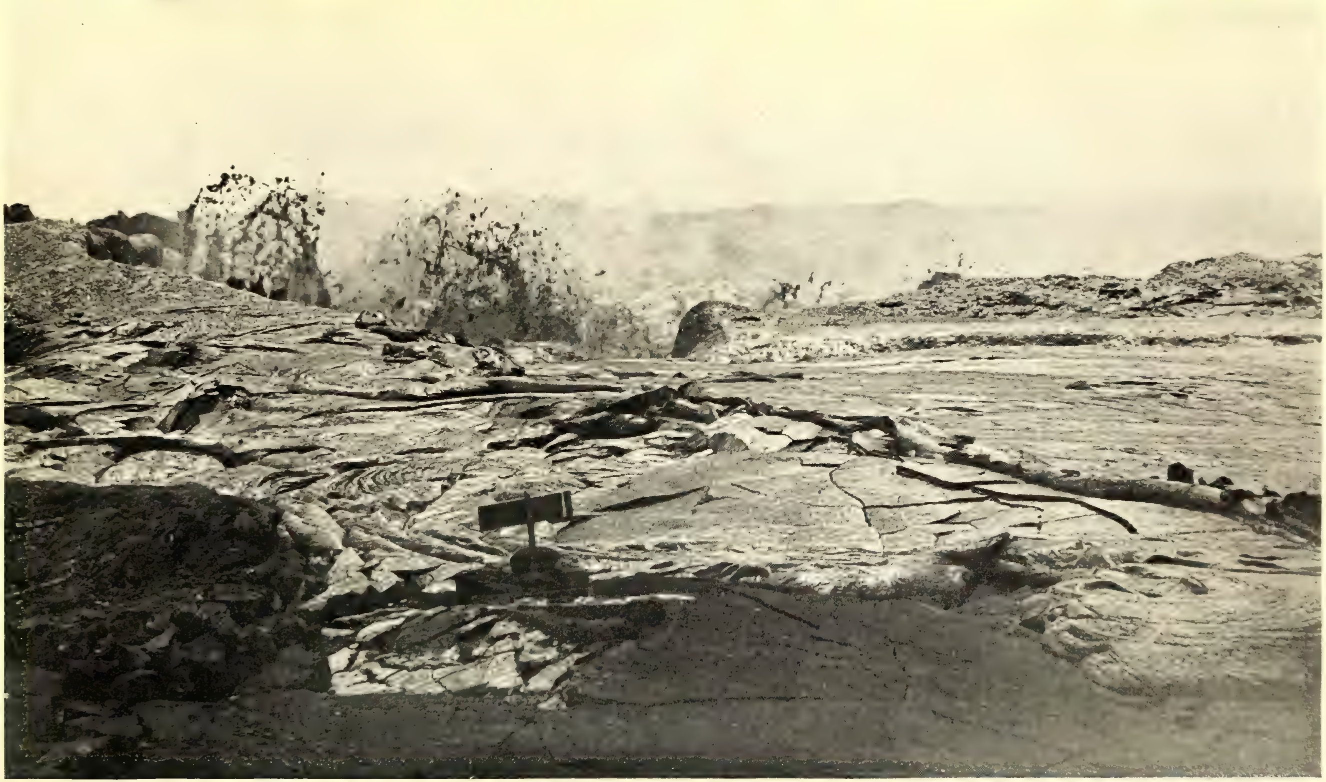
My first reconnaissance of the crater and its environs was made in company with Mr. Joseph S. Emerson and his son Oliver. The former made the topographic survey of the region, and his familiarity with it extends over a lifetime; the latter was at the time of my visit a student assistant on the staff of the Hawaiian Volcano Observatory. The senior Emerson, familiar with the Hawaiian language and native folk-lore, recited the formula with which in earlier days every Hawaiian approaching the fire-pit of the volcano made to the dreaded goddess Pele a propitiatory offering of Ohelo berries—the shining reddish fruit of a species of huckleberry (*Vaccinium reticulatum*), which was ripe at the time, good to eat, and abundant.

The most spectacular view of Halemaumau is obtained at night. At the bottom of a cone-shaped pit, varying from twelve hundred to two thousand feet in diameter, are seen shimmering through sulphurous smoke several lakes of molten lava. At the time of my visit their surface was more than three hundred feet below the rim of the pit. Sometimes they rise to the rim and overflow; at other times they sink away, leaving the pit empty to a depth of perhaps a thousand feet.

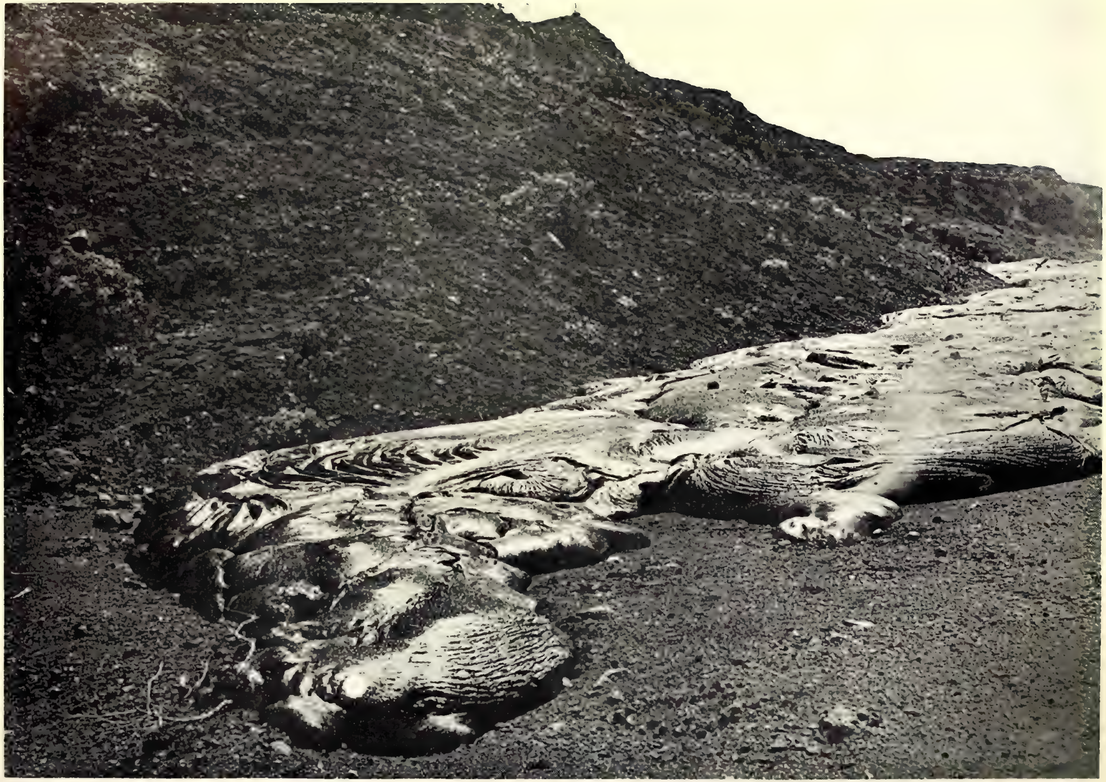
As one watches the lakes at night, their surface is seen to darken gradually as the lava cools and cakes on exposure to the air. Then suddenly glowing cracks run across the surface like lightning. The crust breaks up into fragments which are engulfed, leaving the surface a glowing mass of molten matter upon which fire-fountains play as gases escape from mysterious Plutonian depths. This process is constantly repeated and accompanied by weird, unearthly noises.

On Saturday, the sixth of August, Dr. T. A. Jaggar, volcanologist in charge of the Volcano Observatory, kindly invited me to accompany him on a tour of observation. We first went to an old lava tunnel which was recently found leading away from the inner wall of an old hidden crater. By the aid of a strong flash-light we followed it for a considerable distance under a tropical forest. It was oval in shape, twelve to fifteen feet high, and at regular intervals there were in the ceiling hollows, shaped like the dome of a locomotive, through which gases from the lava probably escaped upward through fissures. The walls were smooth and glistening, and one had the impression of traveling along one of the earth's arteries bereft of its volcanic life-blood. The lava tube probably ended miles away under the sea.

We then went past Halemaumau to some rift-cones where hot gases were rising from lava-filled fissures far below. The orifices of these vents, domed, and facing away from the prevailing wind,



LAVA FOUNTAINS IN THE CRATER OF KILAUEA
Photo by C. S. Carlsmith, March 27, 1921



ADVANCING LAVA-FLOW FROM THE CRATER OF KILAUEA
Photo by C. S. Carlsmith, March 27, 1921

glowed with fervent heat and shimmered with various colors. By standing on top of one for a moment and cautiously peering down into the bowels of the mountain, we could see a hundred feet below a frothing fiery lake of lava. Dr. Jaggar then conducted me along the rift which leads out into the Kau desert. It was the path along which, like a giant mole, the lava from Halemaumau had split and burrowed its way underground in December, 1919, breaking out with surface flows about eight miles from Kilauea. Perhaps the tunnels by which it traveled were much like the one which we had followed a short time before.

However, the most recent and spectacular activity of Kilauea was that of March, 1921, when the lava in Halemaumau spilled over the rim and poured from rift-cones, covering the crater with new flows.* There was violent fountaining in the fire-pit which kept throwing the molten lava high into the air. Everywhere in hollows upon the lava-beds could be found wisps and nests of Pele's hair—delicate glassy fibers spun by the wind from the rising and falling drops of liquid lava. We traveled over a good many of these most recent lava-flows, often breaking through the bulging thin upper crust to the more solid base six inches or a foot below. Most of the lava was of the kind called by the Hawaiians *pahoehoe,* as distinguished from *àa.* Both these terms have been adopted by geologists as scientific terms. The former is lava that when flowing forms glistening skins that stretch and wrinkle (see Plate LXX) and when solidified show a smooth lustrous surface. Aa lava, on the contrary, has a granular and lumpy surface of extreme roughness.

I cannot close this brief account of my experiences without referring to the admirable scientific work which is being accomplished by the Hawaiian Volcano Observatory under the direction of Dr. T. A. Jaggar. The discoveries made are too technical in character to be enumerated here, but they are many and of a highly interesting and important nature. It is to be hoped that the observations at Kilauea may soon be supplemented and correlated with similar continuous observations at Mount Lassen. Dr. Jaggar has promised the writer an article for our BULLETIN on the advantage of correlating Mount Lassen observations with those at Kilauea.

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*The best account of this eruption is in the *Monthly Bulletin of the Hawaiian Volcano Observatory,* vol. IX, No. 3 (March, 1921).

IDENTIFICATION OF THE GREAT PEAKS OF THE SOUTHERN SIERRA

BY J. N. LE CONTE

AT the present time, when access to the High Sierra has been made so easy, when we travel the splendid trails built by the Forest Service, the national parks, or the state, or even ride through the alpine passes in motor-cars, it is easy to forget the difficulties encountered by the pioneers in these regions who had neither map nor even trail to guide them. Yet it was by these very pioneers that all of the principal peaks were explored and named and many of the first ascents were made. To Josiah D. Whitney and his co-workers of the California Geological Survey, William H. Brewer, Clarence King, Charles F. Hoffmann, and J. T. Gardner, belongs the credit of first exploring and mapping the southern High Sierra in 1863 and 1864. And again in the seventies John Muir began his studies in the Sierra which carried him over practically its entire extent. The original naming of the great peaks has now become a matter of great interest to those familiar with our mountains, for data in this connection are being rapidly lost sight of, original records on mountain-tops are all lost, and even the identification of some of the peaks named by the Whitney Survey is a matter of difficulty.

The exploring party of the California Geological Survey entered the Yosemite region in the summer of 1863, followed the Indian trail past Lake Tenaya, and made headquarters in the Tuolumne Meadows near Soda Springs. From that point the region from Lyell to Conness was mapped. Lack of time prevented a southerly extension of the work, but the following year the party, in charge of Professor Brewer, entered the Sierra by way of the divide between the Kings and Kaweah rivers, pushed across the basin of Roaring River to Mount Brewer, from which point Clarence King worked southeast to Mount Tyndall. They then made their way into the Kings River Cañon, and, failing to cross the Granite Basin Divide to the Middle Fork, they crossed the Kearsarge Pass to Independence. The mountains were entered again at the head of Rock Creek and Mono Pass. They made their way down Mono Creek to the South Fork of the

San Joaquin, which they crossed, and then went southward along the divide between that stream and the North Fork of Kings River, hoping to reach Mount Goddard. In this they were unsuccessful, and were finally forced to come out by way of Clark's Station (Wawona). Many of the great peaks of the San Joaquin, Kings, and Kern rivers were named on this trip, but nearly all from a considerable distance. This is particularly true in the San Joaquin watershed, where the party kept far to the west of the Main Crest.

The only method of identifying the peaks so named rests on Hoffmann's map of central California, made at that time. This seems to have been based on a compass triangulation, with the details of the river systems very imperfectly represented. Later, from 1875 to 1879, the U. S. Geographical Surveys west of the 100th meridian, under Captain George M. Wheeler, occupied many stations in the desert country to the east, and fixed with great accuracy the positions of some of the prominent Main Crest peaks, but their identification rested of course on the old Hoffmann map. Again, in 1883, a party of the U. S. Geological Survey in charge of the reconnaissance of the Mono Lake region, under Israel C. Russell, with Willard D. Johnson, topographer, made the first accurate map of that region, followed since by the regular surveying parties of the U. S. Geological Survey which have completed the present quadrangles of the southern Sierra.

It will be seen therefore that the ultimate identification of the principal Sierra peaks rests on the original surveys of the California Geological Survey in 1863 and 1864, and, due to the imperfection of its map in a region where a great many high points are of approximately the same elevation, such identification is in some instances quite difficult. It is with a view of clearing up a few of these doubtful cases, and giving the records of the first ascents, that the following data have been collected. No peaks are considered which do not appear either singly or as a group on the old Hoffmann map.

Starting with the northern edge of the region under consideration, the first great peak of the Main Crest is Mount Conness. This was named in 1863 by the California Geological Survey in honor of Senator John Conness, through whose efforts largely the Yosemite Valley was granted to the State of California as a park.* The first

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*Geological Survey of California. *The Yosemite Guide Book.* 1869. Footnote to page 100.

recorded ascent was made by Clarence King and James T. Gardner.* The exact date is not given by the California Survey, but it was probably in 1866, and was certainly prior to 1869. The peak was occupied as a triangulation station by the Wheeler Survey in 1878, and the original record left on the summit at that time is preserved in the Sierra Club office.† In the summer of 1890 the peak was again occupied as a triangulation point, this time by the U. S. Coast and Geodetic Survey as one of the links in the transcontinental triangulation. Round Top near Lake Tahoe was one of the primary stations, and in searching for another farther south it was discovered that Mount Conness was the only one which could be seen from Round Top and was at the same time reasonably accessible. Accordingly, in June, 1890, the advance party in charge of J. J. Gilbert started the transportation of supplies and instruments to the Tuolumne Meadows. The winter of 1889-90 was one of the stormiest that has ever been recorded in California, and the advance party had to force its way through miles of snow and practically rebuilt the Tioga Road in order to get the teams through. It was July before the base camp was established at Soda Springs. From this point a trail had to be constructed to the summit. By the time the observatory on the highest point and the transit station near the upper camp were completed Professor George Davidson arrived and took charge of the work on August 2. The position of the mountain as deduced from the summer's work is N. Lat. 37° 58′ 01.″5, W. Lon. 119° 19′ 13.″9. The elevation is 12,556 feet.‡

Mount Dana is probably the best-known and most easily accessible of any of the High Sierra summits. It was named by members of the California Geological Survey in 1863 in honor of James D. Dana, the eminent American geologist.§ The first recorded ascent was made that same year by Professors Whitney and Brewer and Mr. Hoffmann. In 1889 the original record was still on the summit, and I made a copy of it in my notebook, following exactly the order of the words, and as nearly as possible the style of the writing. This copy is shown on the opposite page. An excellent description of Mount Dana, the residual glacier on its eastern side, and the sur-

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*Geological Survey of California. *Yosemite Guide Book.* 1869. Page 103.

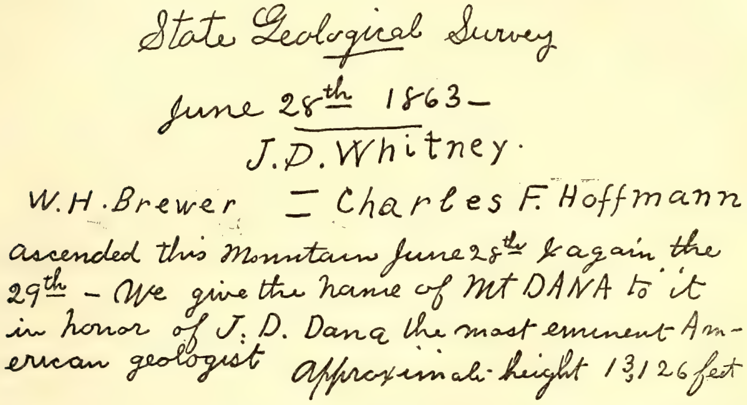
†Sierra Club Bulletin, vol. X, No. 3, Jan. 1918, page 369.

‡*Report of the Superintendent of the U. S. Coast and Geodetic Survey.* 1891. Part I, page 69.

§Geological Survey of California. *Geology,* vol. I, page 435. Also, *Yosemite Guide Book,* footnote to page 100.

rounding region can be found in Russell's report of the Mono Lake Basin.* The height of Mount Dana is 13,050 feet.

Mount Lyell was named at the same time and by the same party in honor of Sir Charles Lyell, the great English geologist. The first ascent is a matter of doubt. Professor Brewer and Mr. Hoffmann in 1863 ascended to the base of the last rocky pinnacle, but did not succeed in reaching the summit. John Muir probably made the first ascent, though he does not lay claim to it in any of his writings. In 1889 the only records on the summit were—



State Geological Survey
June 28th 1863 –
J.D. Whitney.
W.H. Brewer I Charles F. Hoffmann
ascended this Mountain June 28th & again the 29th – We give the name of Mt DANA to it in honor of J. D. Dana the most eminent American geologist Approximate height 13,126 feet

Edward A. Parker, —— McLean, July 2, 1875.
I. C. Russell, G. K. Gilbert, Aug. 12, 1883.
W. D. Johnson, John Miller, Aug. 23-24, 1883.
Gustave Starke, Sept. 12, 1885.
H. P. Dyer, A. C. Hixon, J. A. Marsh, V. K. Chestnut, July 23, 1889.

The residual glacier on the north side of the mountain is the largest, with one exception, to be found in the Sierra. It is covered with compact snow in the early part of the summer, but by fall this covering has generally melted off and the regular system of crevasses is exposed. I. C. Russell made a thorough examination of the glacier under these conditions, and his map shows the positions of the crevasses in 1883.† The elevation of Mount Lyell is 13,090 feet.

Quarternary History of Mono Valley, California. By Israel C. Russell, U. S. Geological Survey, Eighth Annual Report, part I, page 269. Also, *Existing Glaciers of the United States.* By Israel C. Russell. U. S. Geological Survey, Fifth Annual Report, page 309.

†*Quarternary History of Mono Valley, California.* By Israel C. Russell. U. S. Geological Survey, Eighth Annual Report, part I, page 324.

Mount Lyell is one of the most beautiful of our peaks. As viewed from the north, with the grassy meadow and quiet river in the foreground, the symmetrical forested slopes of the cañon-walls on each side as a frame, the magnificent sweep of snow-fields up to the rugged spire at the summit, it makes a picture which inspires the traveler, no matter how often he has previously beheld the scene.

The "King and Queen of the Sierra" is the name sometimes given to Mount Ritter and Banner Peak, and well it may be so used! Few of the Sierra peaks rise so high above their surroundings and form so striking a landmark as this beautiful snow-capped pair. Mount Ritter was named in 1863 by the California Geological Survey party after Professor Karl Ritter, the celebrated German geographer.* Clarence King, about 1866, made the first attempt to climb the mountain, but was unsuccessful.† The first ascent was made by John Muir in the early seventies, and a graphic account of the ascent is given in his "Mountains of California."‡ The second ascent of Mount Ritter, which included on the same day the first ascent of Banner Peak, was made by Willard D. Johnson and John Miller, of the U. S. Geological Survey. About the time of their visit a magnificent cloud-banner was blowing out from Banner Peak, and this gave rise to their name for the latter peak. The height of Mount Ritter is 13,153 feet, and that of Banner Peak 12,953 feet.

Southward from the Ritter group there is a broad depression in the crest-line, and no high peaks are encountered until Red Slate Peak is reached. This descriptive name was applied to the general group of slate peaks north of the Mono Trail by the California Geological Survey in 1864, and the principal point in the group is shown as Red Slate Peak on Hoffmann's map. In Brewer's report he says: "Mr. Gardner visited the crimson-colored group mentioned above, . . . The Red Slate Peaks, as they were called, were found to be about 13,400 feet in elevation."§ This would seem to show that Gardner made the first ascent, though it is not so definitely stated. Mr. C. L. Cory and I made the ascent in 1898, and found no indication at that time of any previous occupation.‖ Brewer's estimate of its height is too large, the actual figures being 13,152 feet.

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*California Geological Survey. *Yosemite Guide Book.* Footnote to page 101.

†Same. Page 109.

‡*Mountains of California.* By John Muir. Page 53.

§California Geological Survey. *Geology,* vol. I, pages 396, 397.

‖"Basin of the South Fork of the San Joaquin River." By J. N. Le Conte. SIERRA CLUB BULLETIN, vol. II, No. 5, Jan. 1899, page 251.

Southward from the slate peaks is a wilderness of mountains about the headwaters of the San Joaquin River. The only two Main Crest peaks which are given names on Hoffmann's map are Mount Abbot and Mount Humphreys. These were named by Professor Brewer for Andrew Atkinson Humphreys and Henry Larcom Abbot, whose classic report on the hydraulics of the Mississippi River was published in 1861.* It was under General Humphreys, as Chief of Engineers of the War Department, that Clarence King wrote his great report on the Surveys of the 40th Parallel.

The exact location of Mount Abbot is not clearly represented on the original map, but, correcting this for a slight error in position as given by the known co-ordinates of Mount Lyell and Mount Brewer, its location appears to be N. Lat. 37° 23.′0, W. Lon. 118° 47.′6, which is practically identical with the peak so represented (the highest in the vicinity) on the Mount Goddard Quadrangle of the U. S. Geological Survey. Captain George M. Wheeler locates Mount Abbot as N. Lat. 37° 22′ 24.″8, W. Lon. 118° 47′ 58.″0.† There can be no question, then, as to the correct position of the mountain. The Brewer party did not approach Mount Abbot at all, and it was not even attempted till 1908, when the first ascent was made by J. S. Hutchinson, Duncan McDuffie, and J. N. Le Conte.‡ The elevation of this mountain is given by the U. S. Geological Survey as 13,736 feet.

There has been a great deal of misunderstanding concerning the first ascent of Mount Humphreys. This magnificent peak, the supreme summit of the San Joaquin Sierra, was named by the reconnaissance party of the California Geological Survey in 1864. However, no mention of any sort is made in their written reports, and the only guide to its location is the Hoffmann map, where it appears clearly located on the Main Crest, with no other named point anywhere between Mount Abbot and Mount Goddard. Taking the position of the peak as shown on the old map, and correcting this latter for a slight error in co-ordinates, the position comes out N. Lat. 37° 16′ 6″, W. Lon. 118° 39′ 6″. Hoffmann evidently fixed the position by triangulation from the San Joaquin–Kings River Divide twelve

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***Physics and Hydraulics of the Mississippi River.* 1861. J. B. Lippincott & Co., Philadelphia.

†U. S. Geographical Surveys West of the 100th Meridian. *Table of Geographic Positions, etc.* 1885. Page 15.

‡"The High Mountain Route between Yosemite and Kings River Cañon." By J. N. LeConte. SIERRA CLUB BULLETIN, vol. VII, No. 1, Jan. 1909, page 13.

miles to the west, and the topography of the region about Mount Humphreys as shown on his map is of the vaguest sort, having no resemblance whatever to the reality. But with the position as given above I had no difficulty in locating this great isolated peak in 1898, and placed it at the head of what is known now as Piute Creek. Later I found that Captain George Wheeler had given the co-ordinates of Mount Humphreys as Lat. 37° 16′ 01.″7, Lon. 118° 40′ 10.″9, evidently drawing the same conclusions from the Hoffmann map that I had.* When the Mount Goddard Quadrangle was surveyed by the U. S. Geological Survey in 1909, this same location was finally adopted for Mount Humphreys. Since there is no other peak of approximately equal height for a radius of seven miles, I think there can be no question that the peak is correctly shown. With the above data in hand, Mr. C. L. Cory and I attempted the ascent in 1898, but the spiry pinnacle defeated us when about five hundred feet below the top.† In 1904 the first ascent was made by Mr. James Hutchinson and his brother Edward Hutchinson.‡ The height of the mountain is 13,972 feet.

Much confusion has existed regarding the first ascent on account of the fact that John Muir describes the view from the summit of Mount Humphreys in his "Studies in the Sierra."§ I am confident, however, that Mr. Muir did not ascend the true Mount Humphreys, but some peak farther south, probably one of the Evolution group, and I base my conclusions on a conversation which I had with him shortly after my attempted ascent in 1898. When my account was published in the SIERRA CLUB BULLETIN, Mr. Muir spoke to me about the mountain, saying that I must have attempted the wrong peak, since the mountain he had climbed many years ago was not a spiry pinnacle, but a great rounded mountain mass, up which there was no particular difficulty in going. I questioned him regarding his identification of the peak, and he replied that Mr. Hoffmann had described its location to him. He said furthermore that the peak stood at the head of a tributary of the South Fork which entered the main cañon in a fall. Since this description does not fit Piute Creek,

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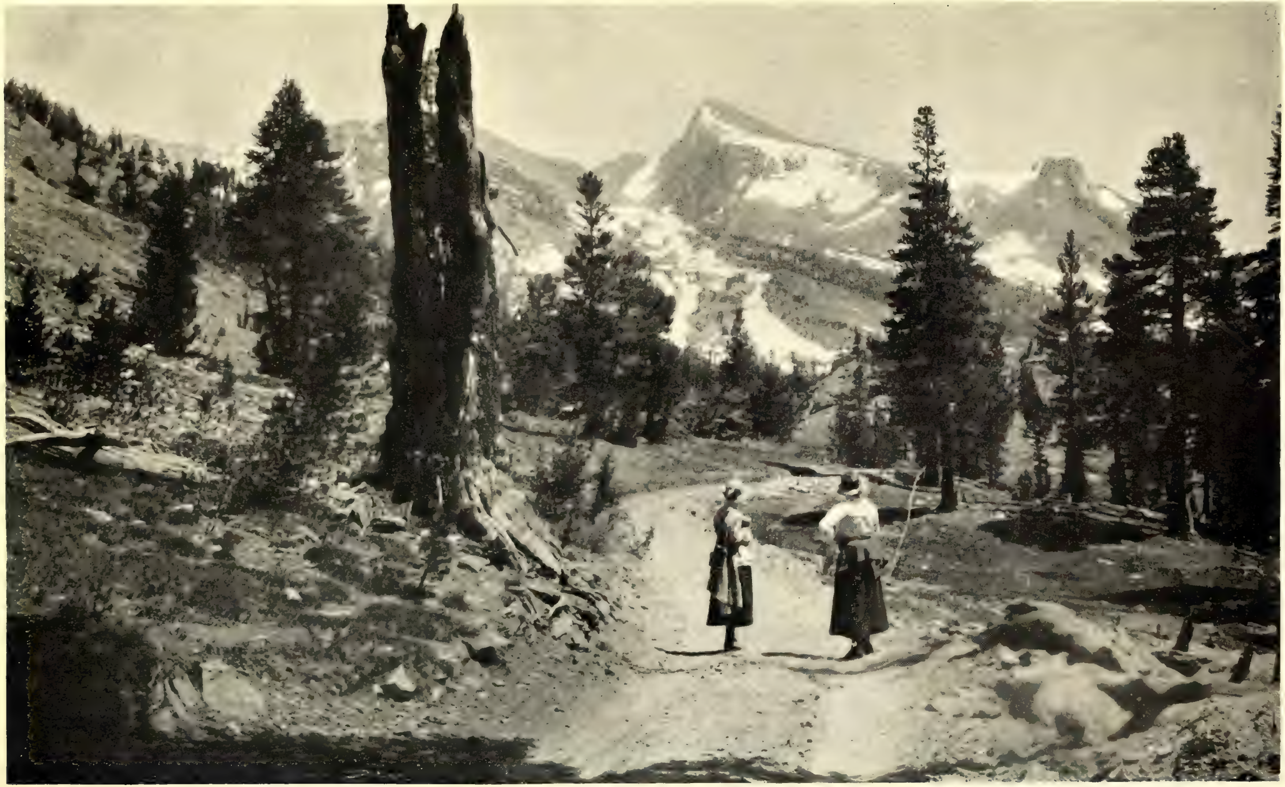
*U. S. Geographical Surveys West of the 100th Meridian. *Table of Geographic Positions, etc.* 1885. Page 18.

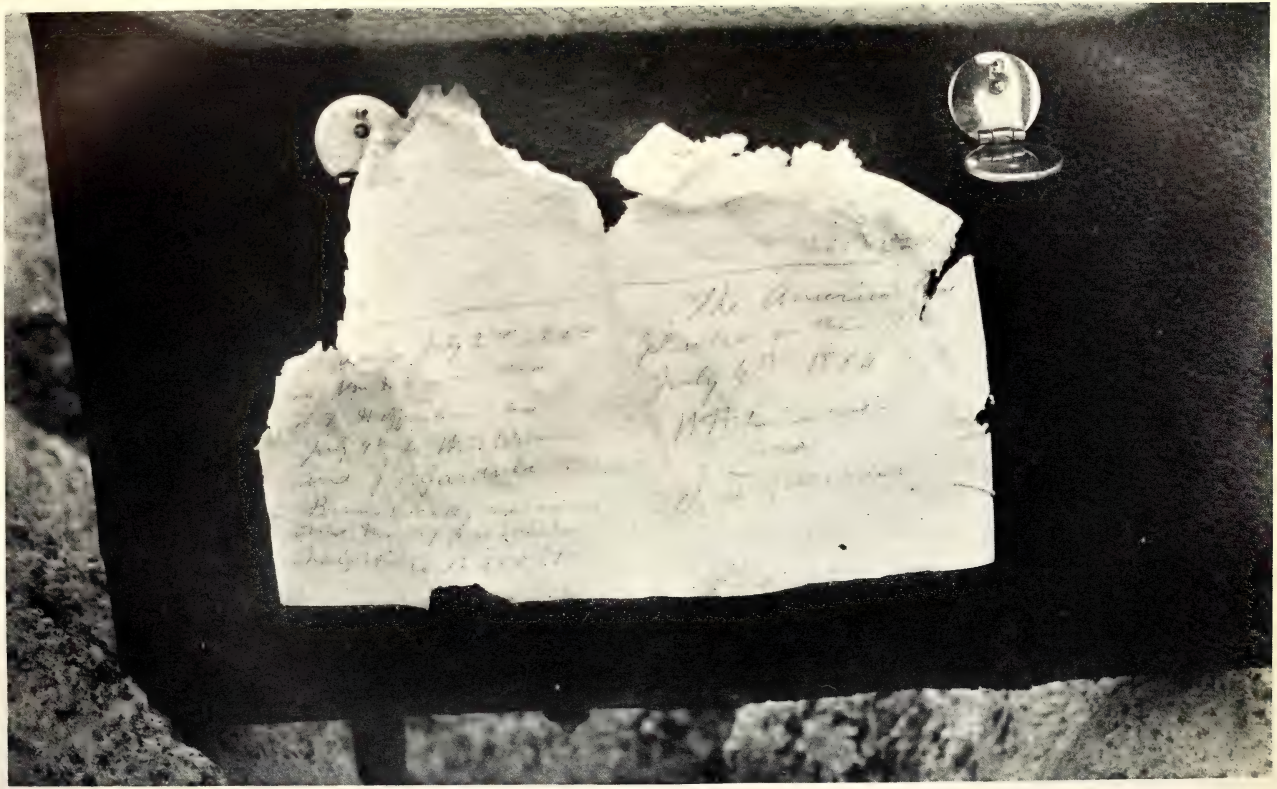
†"Basin of the South Fork of the San Joaquin." By J. N. Le Conte, SIERRA CLUB BULLETIN, vol. II, No. 5, Jan. 1899, page 256.

‡"First Ascent: Mount Humphreys." By J. S. Hutchinson, Jr. SIERRA CLUB BULLETIN, vol. V, No. 3, Jan. 1905, page 153.

§"Studies in the Sierra." By John Muir. *Overland Monthly,* Jan. 1875. Also, SIERRA CLUB BULLETIN, vol. XI, No. 2, page 182.



MOUNT DANA FROM SADDLEBAG LAKE
Photo by Walter L. Huber



THE ORIGINAL RECORD LEFT ON MOUNT BREWER
Photo by J. N. Le Conte

but is an exact description of Evolution Creek, and since his description of the mountain itself is so totally different from the true peak, and finally since Mr. Hoffmann himself did not approach within twelve miles of the mountain, I think there can be no doubt that Mr. Muir was in error in his identification of Mount Humphreys.

Of all the peaks of the San Joaquin–Kings River watershed, Mount Goddard is the most prominent. This is not because of its height, which is 13,555 feet, but on account of its position five miles west of the Main Crest on the divide between the two river basins. The peak was named by the Brewer party in 1864, after George H. Goddard, a civil engineer of Fresno County.* Members of the party attempted the ascent at that time, but were not able to approach the mountain near enough to complete it. The first ascent was made in 1879 by Lil. A. Winchell, of Fresno, and his original record was still on the summit in 1898. Probably no mountain in the southern Sierra commands such an extensive view as does Mount Goddard, every peak in the range being clearly visible from Mount Conness to Mount Whitney.

The magnificent group of the Palisades was first seen and named by Professor Brewer's party in 1864. They were attempting to find a way across the Monarch Divide at the time, and probably obtained their first sight of these peaks from a point near Goat Mountain.† Captain George M. Wheeler fixed accurately the position of the highest point in 1878, and called it the Northwest Palisade.‡ Since that time this great peak, the culminating point of the Kings River watershed, has been known as the North Palisade, and is so designated on the Mount Goddard Quadrangle of the U. S. Geological Survey. Wheeler gives its position as N. Lat. 37° 5′ 26.″9, W. Lon. 118° 30′ 40″, and its height as 14,275 feet. The U. S. Geological Survey places its height at 14,254 feet. The first ascent was made by James S. Hutchinson, James K. Moffitt, and J. N. Le Conte in 1903.§ Wheeler also gave the name Southeast Palisade to the great peak generally called Split Mountain, giving its co-ordinates as N. Lat. 37° 00′ 57.″3, W. Lon. 118° 25′ 09.″6. The Geological Survey places its height at 14,051 feet. The first ascent was made by Helen M. Le Conte, Curtis M. Lindley, and J. N. Le Conte in 1902,* and it was afterward used as a triangulation station by the Geological Survey. The Middle Palisade (14,049 ft.) was ascended first by Francis P. Farquhar and Ansel F. Hall in 1921.

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*Britton and Rey's Map of the State of California. 1857. By George H. Goddard.

†Geological Survey of California. *Geology*, vol. I, page 393.

‡Geographical Surveys West of the 100th Meridian. *Tables of Geographic Positions, etc.*, page 19.

§"Ascent of the North Palisades." By J. N. Le Conte. SIERRA CLUB BULLETIN, vol. V, No. 1, Jan. 1904, page 1.

About the headwaters of the South Fork of Kings River and those of the main Kern is a splendid group of peaks including Whitney, Tyndall, Williamson, Brewer, and the Kaweahs. Of these Mount Brewer, named after the chief of the reconnaissance party of 1864, was the first peak of the southern Sierra to be ascended. It was ascended July 2, 1864, by Professor Brewer and Mr. Hoffmann, and again on July 4 by Brewer, Hoffmann, and Gardner.† Thirty-one years later, C. L. Cory, Harvey Corbett, and I ascended the peak from the west, but did not find the record left by Professor Brewer, as deep snow covered the summit.‡ But in 1896, after ascending from the east, one of the members of the party found the bottle containing the record, which was carefully removed, and which I succeeded in photographing.§ It bore the record of but one other climber during the period of thirty-one years. The record remained on the summit for a number of years after that; but the fragile paper was broken by continual handling, and it was finally removed to the Sierra Club rooms for preservation, where it was unfortunately destroyed in the fire of 1906. The elevation of Mount Brewer as given by the U. S. Geological Survey is 13,577 feet.

Mount Tyndall was first ascended by Clarence King and Richard Cotter, on July 6, 1864,‖ and a graphic account of this trip is told by King himself in "Mountaineering in the Sierra Nevada." It has always been a mystery to me why King picked out so comparatively unimportant a peak as this to climb and bestow upon it the name of the great English physicist. As viewed from the summit of Mount Brewer, Mount Tyndall would scarcely be noticed, being entirely overtopped and overshadowed by the huge bulk of Mount Williamson, a mile and a half to the east. It would appear that King must have started out with Mount Williamson as his objective, but afterward abandoned it, due to lack of time and the difficulties of the trip. The height of Mount Tyndall as given by the Geological Survey is 14,024 feet.

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*"Among the Sources of the South Fork of Kings River." By J. N. Le Conte, SIERRA CLUB BULLETIN, vol. IV, No. 4, June, 1903, page 253.

†California Geological Survey. *Geology*, vol. I, page 379.

‡SIERRA CLUB BULLETIN. "Notes and Correspondence," vol. I, No. 7, Jan. 1896, page 288.

§"Up and Down Bubbs Creek." By Helen Gompertz. SIERRA CLUB BULLETIN, vol. II, No. 2, May, 1897, page 88.

‖California Geological Survey. *Geology*, vol. I, page 386.

Mount Williamson is the real monarch of the Kern River Sierra. It stands just to the east of the Main Crest, and rises in one magnificent sweep ten thousand feet above the Owens Valley. It was named by Clarence King from the summit of Mount Tyndall in honor of Colonel Robert S. Williamson, U. S. Engineers.* Its position as given by Captain Wheeler is Lat. 34° 00′ 48″.4, Lon. 118° 01′ 14″.5, and its height 14,360 feet. More accurate work by the U. S. Geological Survey puts its height at 14,384 feet. The first ascent was made in 1884 by W. L. Hunter and C. Mulholland, of Independence. They ascended it by following up Georges Creek to its head, and climbing the southeast slope, which is largely talus. The ascent from the west is shorter, but more difficult, being cliff-work similar to the Palisades.

Mount Whitney was named by Clarence King from the summit of Mount Tyndall for J. D. Whitney, chief of the California Geological Survey in 1864.† At that time he could not extend his trip southward so as to include this the culminating point of the Sierra, but later in the same year he worked his way into the Kern River basin with the intent of capturing it, and failed to arrive within striking distance. In 1871 he again attempted the ascent, this time from the Owens Valley side, but climbed the wrong mountain. Storm-clouds prevented his seeing the true peak, and he left his record on what is now known as Mount Langley, claiming first ascent of Whitney, and ignorant of his error.‡ In 1873 Mr. W. A. Goodyear climbed the same peak and found King's record. It being a clear day, he at once recognized King's error, and on his return published the facts.§ King returned at once and climbed the true peak on September 19, 1873,|| but he was too late, for on August 18th of the same year John Lucas, C. D. Bengole, and A. H. Johnson had made the first ascent, and finding the mountain unnamed bestowed upon it the highly inappropriate name of Fisherman's Peak.¶ For a time this unfortu-

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*California Geological Survey. *Geology*, vol. I, page 386.

†Same. Page 386.

‡*Mountaineering in the Sierra Nevada.* By Clarence King. Page 341.

§"On the Situation and Altitude of Mt. Whitney." By W. A. Goodyear, C.E. Proceedings of the California Academy of Sciences, Aug. 4, 1873.

||*Mountaineering in the Sierra Nevada.* By Clarence King. Page 360.

¶U. S. Geographical Surveys West of the 100th Meridian, vol. I. *Geographical Report*, page 100.

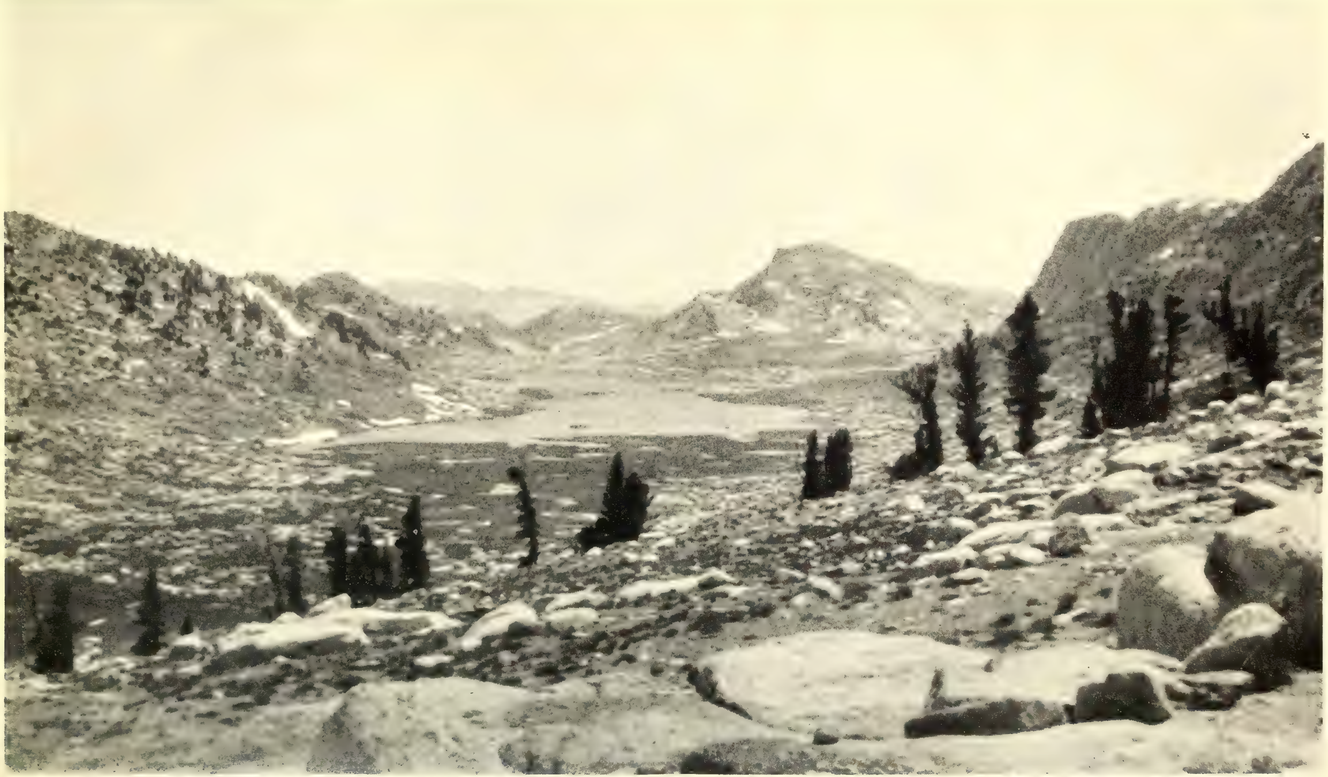
nate name seemed likely to stick, but it has at last been forgotten, and Mount Whitney stands now the highest point within the immediate boundaries of the United States, 14,501 feet, this figure being the result of two lines of levels run by the U. S. Geological Survey.

The Kaweah Peaks were named by the Brewer party after the Indian tribe of the San Joaquin Valley—at least this name so appears on the original Hoffmann map. The first ascent of the main Kaweah peak was made by a party consisting of J. W. A. Wright, F. H. Wales, and Judge Wallace, of Visalia, in 1881.* Its height is given as 13,816 feet by the U. S. Geological Survey. The Black Kaweah (13,752 ft.), a far more difficult climb, was first ascended by J. S. Hutchinson, Duncan McDuffie, and O. I. Brown in 1920.† This peak was originally called Mount Abert by the Wright party in 1881.

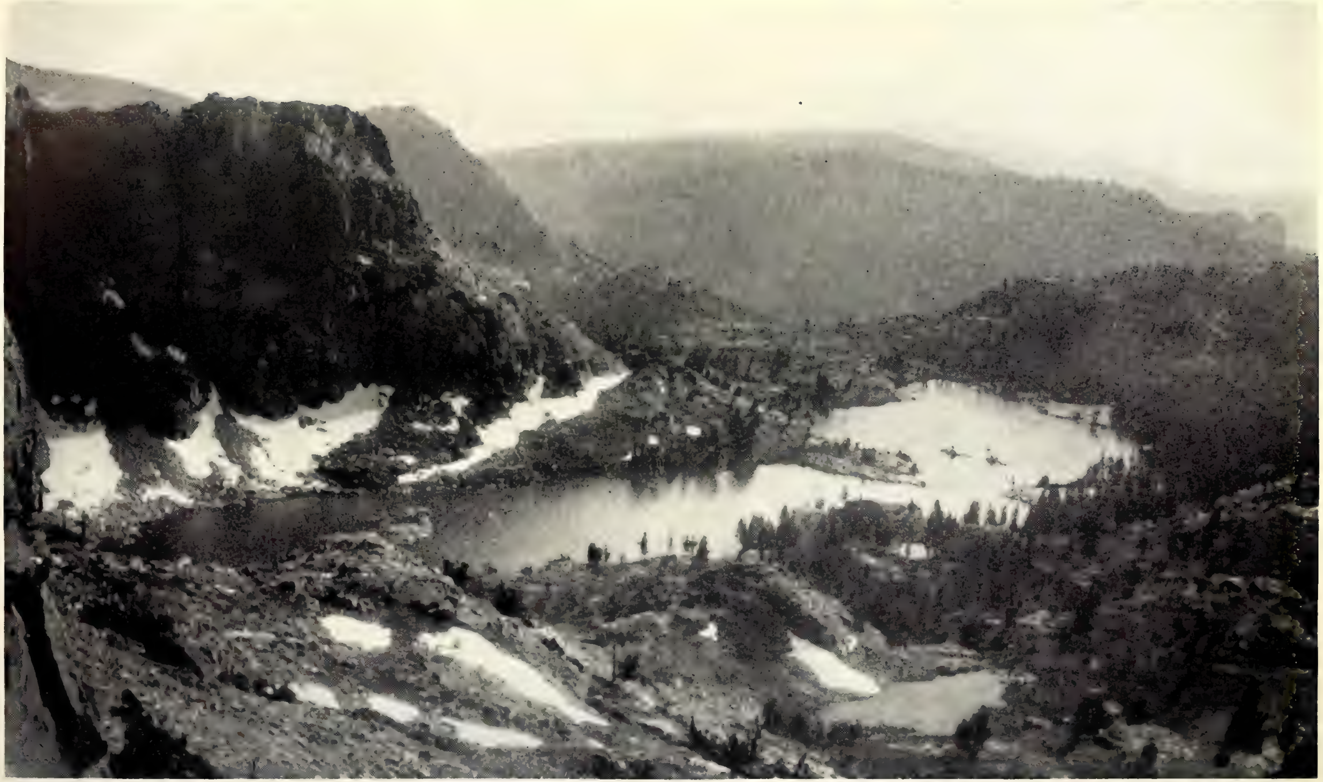
There are of course many other equally fine peaks in the Sierra Nevada, but their naming is of a comparatively recent date, most of the data being given in various issues of the SIERRA CLUB BULLETIN. The mountains mentioned here, however, are particularly interesting as being the most prominent, and, due to their prominence, have been the first named and described.

Guide to the Grand and Sublime Scenery of the Sierra Nevada. 1883. W. W. Elliott & Co. Page 48.

†"Colby Pass and the Black Kaweah." By J. S. Hutchinson. SIERRA CLUB BULLETIN, vol. XI, No. 2, Jan. 1921, page 133.



ROCK ISLAND LAKE
Photo by E. A. Hornuth



RODGERS LAKE
Photo by E. A. Hornuth

THE 1921 OUTING

BY JULIE MORTIMER

THE 1921 outing saw the return of the club to its private camp at the Soda Springs in Tuolumne Meadows. To many—and among them the writer—this outing was a first experience of camping in the High Sierra. Its story is a record of long happy days in the open air; of peaks climbed and passes crossed; of evenings when the afterglow reposed upon mountain and meadow; of nights when the stars shone brilliantly out of the blue depths of a frosty sky; of camp-fires where the music of a violin carried thoughts thousands of miles away to other scenes. These and a hundred other fleeting impressions made up a whole difficult indeed to set down, but unforgettable to those who were there.

One afternoon, when the shadow of El Capitan lay across Yosemite Valley, we drove through tall incense-cedars and yellow pines to our camp below Mirror Lake. In an open space among the trees the dunnage-bags were piled up waiting for us, and there we had our first meal at commissary, and learned to wear our spoons in our boots and carry our tin cups like Old-Timers. There, too, we spent our first night in the open air and fell asleep with the murmur of Tenaya Creek in our ears.

After one day in the Yosemite camp we took the Sunrise Trail, past the magnificent Vernal and Nevada falls, to our one-night camp under the red firs of Sunrise Meadow. Some of the party climbed Half Dome *en route,* by the new trail and stairway completed two years ago under the auspices of the club, and others took the Clouds Rest Trail, but the majority were content to follow the route outlined the night before.

The call was at five next morning, and the chill of dawn in the high altitudes was still in the air when we climbed the flank of Sunrise Mountain, descended and crossed Long Meadow, where the mosquitoes gave us a bad quarter of an hour, climbed the slope past Columbia's Finger, and skirted the base of Cathedral Peak, beyond which the trail runs into the Tioga Road and Tuolumne Meadows. Our first view of the meadows was singularly beautiful. A wide stream flowed through the broad green meadowlands, which were starred with flowers and bordered by tamarack pines, while far up the valley to the east the dark-red slopes of Dana and Gibbs and the gray granite of Kuna Crest stood out against the clear blue sky. Under the pines by the Soda Springs the club settled down in its permanent camp, though, with the first main side-trip only two days off, the stay for many was not to be a long one.

During the club's stay in the meadows short but interesting trips were made to Elizabeth and Budd lakes. Eleven of the former party climbed Unicorn, and five of the latter reached the topmost point of the Cathedral Spire. Then the first main side-trip left the meadows for a six days' tramp in the northern part of the park, including Matterhorn Cañon and Benson and Rodgers lakes. Over one hundred and twenty of the one hundred and eighty or more on the outing took this side-trip. The first night's camp was made at the junction of the Tuolumne River with Conness Creek. Most of the party went on down the cañon that day past California and Le Conte falls to the rush and roar of the great Waterwheels. The lodgepole pine and western junipers of Conness Creek here give place to Jeffrey and sugar pines. The last half-mile is a scramble through a tangle of manzanita where the trail splits into half a dozen tracks, each ending after a few yards in rocks or brush. All along the bank of the river tea parties were held on rocky ledges where the water went hissing past beneath tall sugar pines. Those who had had the forethought to bring fishing-tackle added fresh fried trout to the usual menu.

From Conness Creek the party moved through Cold Meadows and Virginia Cañon to the second night's camp in Matterhorn Cañon among the whitened skeletons of insect-killed tamarack pines. Next day, owing to adverse trail conditions, part of the route was abandoned, and the main party went direct to Benson Lake, where two nights were spent. A party of fifteen knapsackers, however, led by Mr. Clyde, followed out the original itinerary, traversing the little-known northern end of the park and visiting Rock Island Lake and Kerrick Cañon. On the first day of this trip a party climbed Matterhorn Peak and learned from the Sierra Club register that only twenty-three people had made the ascent since the book was placed there in 1899, which is proof of its remoteness, for the view from the summit was well worth the effort. Northward the sky was dark with gathering thunder-clouds and a cold wind discouraged any undue lingering, but south and west the day was clear and the sun shone down on a wild waste of barren peaks and ridges with tiny lakes nestling at their bases.

Another knapsack party, led by Mr. Chase, climbed Whorl Mountain and both parties rejoined the club in its camp at Rodgers Lake. This lake, set in a hollow of the mountains, fringed with forest, and with Regulation Peak rising sheer from its shore-line, was perhaps the most beautiful spot which the main party visited. Those who had the good fortune to camp with the knapsackers will not easily forget Slide Cañon when the moon rose behind the mountains, throwing each point of the Sawtooth Range and the towering Matterhorn into sharp relief, while the Finger Peaks shone like twin points of silver and the black velvet shadows of the ragged pines rested like dark islands in the flood of moonlight. From Rodgers Lake the club went back over the same trail by Benson Pass and Matterhorn Cañon to another one-night camp in Virginia Cañon, and the following day returned to the Soda Springs.

Some of the first two weeks' party were to leave next morning, so that evening those who had remained in camp during the side-trip staged a vaudeville show, including a pantomime of "Bluebeard." A row of stones marked the limits of the stage, two large bonfires served as footlights, and the costumes were made of bathing-suits, rugs, mosquito-nets, and other odds and ends that could be got together. Bluebeard's chin was fringed with blue lupines, and the heavy jeweled chain he wore proved on closer inspection to consist of a fine selection of carrots and onions, borrowed from the commissary.

The interval between the departure of the first two weeks' party and the beginning of the second main side-trip on July 27th was filled by various short trips, including two knapsack-trips, to Dana and to Mount Conness. During this interval, too, Mr. Stephen T. Mather, the Director of the National Park Service, paid the club a visit and spoke at the camp-fire on the work of the Park Service in the Yosemite. His statement that work was to be begun at once on a continuation of the trail to the foot of the Waterwheels was greeted with cheers by those who had scrambled through the manzanita a few days previously.

The second two weeks' party arrived at the Meadows on July 25th,

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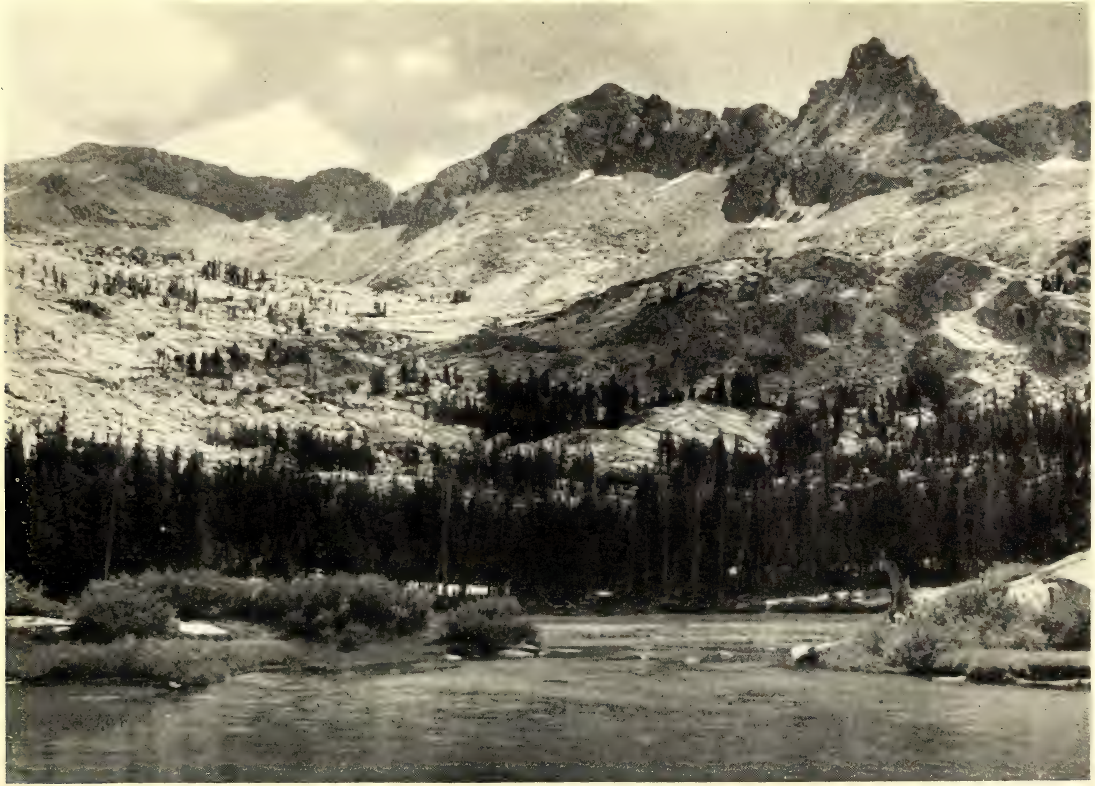
having made an overnight camp at Murphy Creek on Lake Tenaya. Two days later the second main side-trip, over a hundred strong, left the Soda Springs for the Banner-Ritter country. The first night we spent at the Lyell base camp on Lyell Fork. Our sleeping-quarters were on a slope about thirty feet above the commissary, where the reasonably level space was so limited that in the women's camp individual camp-sites were all merged into one, and we lay down with our bags almost touching one another. Sleep that night was also limited—at any rate, for those who were to climb Lyell. The stars were still shining when the call sounded. Mr. Colby led the party, which included a moving-picture outfit, and numbered over eighty; sixty-seven eventually reached the summit.

The route led up over wooded slopes and past tiny lakes, on the shores of which the beautiful cassiope grew in great masses, and to the moraine at the foot of the snow-covered glacier. The chimney usually taken was dangerous for so large a party, owing to snow conditions, and so the ascent was made by a more western chute, which proved quite easy to climb, although there were so many loose rocks that it was necessary to take some care to avoid knocking them down on those below.

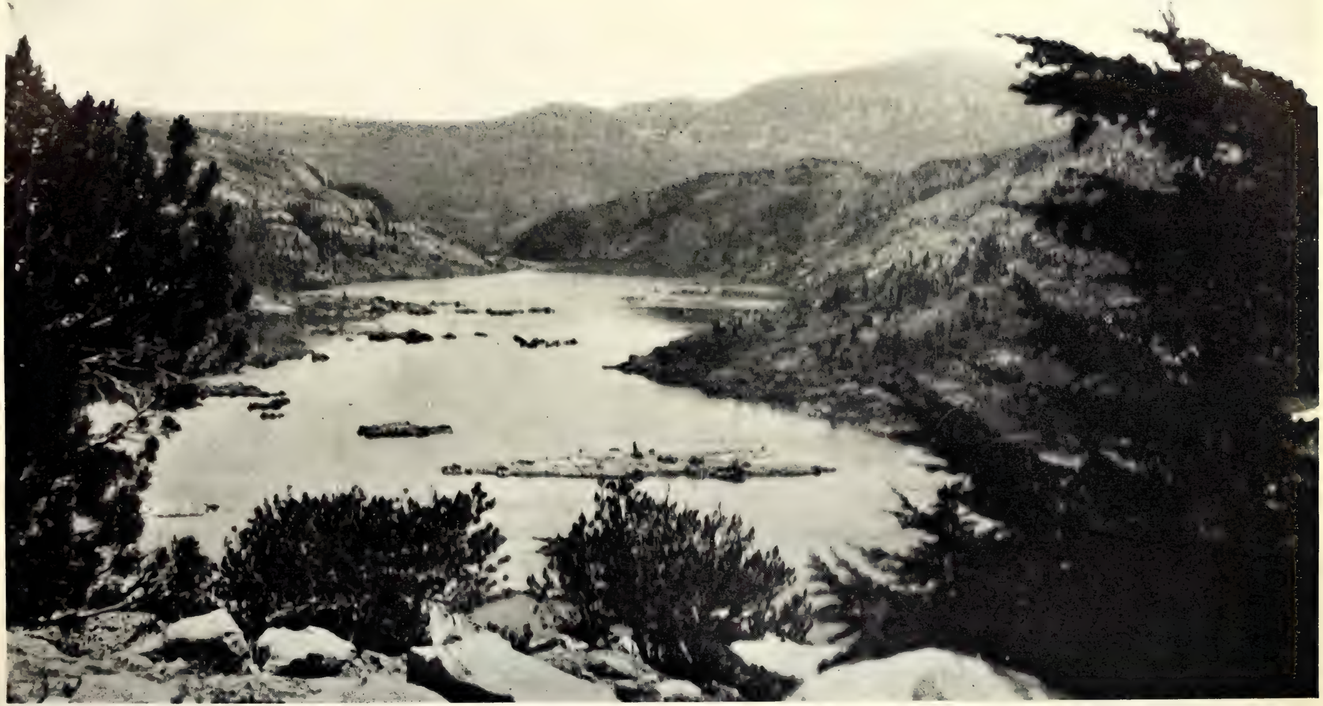
Among the barren rocks within a few feet of the summit were numerous patches of *Polemonium eximium,* a brave little blue flower that makes its home on the rugged peaks of the Sierra above timber-line. The party remained about an hour on the peak. At a point farther along the slope of the mountain a short descent on rather loose rock brought us to a steep snow-slide, down which everyone tobogganed.

From the moraine at the foot of the glacier some returned to the Soda Springs camp. The party which the writer joined crossed the stream at the head of Lyell Fork and climbed to Donohue Pass, a bare rock-strewn gap above timber-line, from which the trail to the beautiful camp-site on Thousand Island Lake was reasonably clear. The majority of the Lyell party got to camp in time for supper, but the last stragglers arrived at two A.M. One party of twelve camped out overnight at Rush Creek, where Mr. McDuffie provided them with food and some blankets. A huge fire, which was kept burning all night, made up for missing sleeping-bags.

The club remained two nights at its camp on Thousand Island Lake in order to facilitate matters for those who were to climb Ritter.



VIEW FROM LYELL MEADOWS, LYELL FORK OF MERCED RIVER, YOSEMITE NATIONAL PARK
Photo by Ansel E. Adams



GARNET LAKE, NEAR MOUNT RITTER
Photo by C. S. Tappaan

The Ritter party consisted of ten men and eleven women, under the leadership of Mr. Allen. Mr. Clyde, who had gone up alone to the summit the preceding day to scout out a route, acted as guide to the party. The climb was made by way of the Ritter-Banner saddle. Beyond, a steep snow-tongue and some eight hundred feet of rock-work lay between us and the summit, which we reached five and a quarter hours after leaving Thousand Island Lake. The lake was hidden by the rugged mass of Banner, which is only a few hundred feet lower than Ritter itself, but beyond it rose the Dana group, Conness and Ragged Peak, Lyell and McClure, and southward the Minarets—all familiar points in a wide vista of mountain peaks and ridges stretching away in every direction.

We returned by a series of snow-slides to the new camp on Garnet Lake, the original intention of camping in the Shadow Lake Basin having been abandoned owing to difficulties with the pack-train. Many parties, however, crossed the divide to the south and visited one or more of the beautiful lakes which lie beyond it. Iceberg Lake is a sapphire gem set in dark rock, with a pale-green glacier and the black spires of the Minarets towering above it. The grassy margin of Lake Edisa is strewn with flowers and bordered by graceful mountain hemlocks; in the background rises the majestic bulk of Banner and Ritter.

From Garnet Lake the trail next day led back across the divide toward Thousand Island Lake, then by the flower-covered meadows of Agnew Pass to Gem Lake—whose shores were ringed with dead trees, killed by the raising of the water-level—and to Gem Pass. Here, where even the hardy *Pinus albicaulis* gives way before the winds which sweep over the divide, we stood and looked down thousands of feet upon Mono Lake and the Mono Craters shimmering in the mid-day heat of the desert, while behind us lay the high crest of the Sierra, wave on wave of dark peaks and snow-covered glaciers—a study in contrasts as fine as any we were privileged to see.

That night's camp-ground at Alger Lake closely fitted the description of it given us by the management. It "commanded an uninterrupted view in all directions," and the small scattered groups of stunted *albicaulis* on the steep hillside were eagerly sought. Bathing in the lake, with a large snow-bank close by, was too cold to attract a crowd; but if the bathing-queue was not large, the same cannot be said of the dinner-line.

This was the last night of the side-trip. Next day the party climbed the barren, treeless slopes of Parker Pass and descended the long zigzag on the farther side, coming out into the desolate valley between Mount Gibbs and Koip Crest. Beyond this a winding trail through tamarack forest led after several miles to the Tioga Road and again to the Soda Springs. Those who did not wish to get into camp early climbed Parker Peak for a further view of Mono Lake. Some crossed Mono Pass and descended the narrow defile of Bloody Cañon, whose bare walls, an ominous red in color, witnessed many a miner's tragedy in the early days of the gold rush.

There followed one more day under the cloudless sky of the Meadows before we said good-by to high mountains and took the dusty road to Lake Tenaya, to our last camp-fire in a clearing among the red firs, and to the last long zigzag down to the valley by the Snow Creek Trail.

THE MOUNTAIN AND THE SEA*

By Chester H. Rowell

◆

MR. CHAIRMAN AND FELLOW MOUNTAIN LOVERS:—Let me first congratulate you on your good looks, and hope that friends have recognized each other in spite of those good looks. I have seen you when you looked otherwise, and I have, on those occasions, observed some other things than looks—for instance, a new aspect of femininism. Even our great-grandparents recognized that women were our moral superiors. It took our generation to discover, by humiliating experiences, in schools and lately in politics, that women are our intellectual superiors; but it took the Sierra Club to reveal that they are our physical superiors. I used to think I was a pretty good mountain "hiker" myself; but no matter how long or how hard a walk I took, there was always some Sierra Club girl ahead who had beaten my record.

You are to be congratulated not merely on your membership, but on your mission, for you are dedicated to the doctrine that no matter how thick this earth may be piled with the works of man, there shall still be preserved on it some of the works of God. We may scratch the earth for our crops and pile up baked earth for our dwellings and factories to supply the needs of our bodies, but also we still need the earthly symbols of the Infinite to minister to the infinite soul within.

The earth has two symbols of the Infinite—the great mountains and the great sea. But there is one creed of the mountains and another of the sea. The mountain is a theist; the sea a pantheist. The mountain points upward to heaven; the sea dissolves into Nirvana.

On the mountain the finger of God has written the story of creation. There is beginning and middle and end, and a multitude of episodes and digressions. The mountain itself is a growth, a visible handiwork. Upheaved in the morning of time from the metal bowels of Earth; corroded into earthy salts by rains of boiling acid; laid down in the bed of a steaming sea and upheaved again; buried and metamorphosed into granite; outcropped and ground by the first glaciers, spread out as soil and silt, the home and the grave of living creatures; washed by softer rains and compacted into sedimentary rock, with the fossils of its children hidden in its matrix; crumpled and tilted into a new mountain range, with its crown of living verdure, its veil of shifting cloud, its diamond cascades; its face scarred with the glaciers and the storms of ages and buried in its structure the record of all the ages before—that is a tale, not of death, but of life. Vast time and vast forces have gone to the making of the mountain, but they are comprehensible and finite; the projection, not the immediate symbol, of the Infinite. The mountain inspires to thought and to work. There are things to understand and things to do, all on a scale grand enough to uplift, but not overwhelming enough to cast down. Humanly the mountain speaks the language and preaches the creed of the occidental man. One can be a Christian in the mountains, and believe in a personal God and an individual immortality. Also, one can work and think and study, and remember and plan.

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*Address delivered at the Annual Reunion Dinner of the Sierra Club, at the Palace Hotel, San Francisco, December 9, 1921.

A mountain's life is a man's life multiplied by billions, but not a changeless infinity. The mountains call us, not to rest, but to work. A great peak is a frowning challenge, until we have scaled it; a strong and trusted friend thereafter. We can share the life of the mountain; we can search its history until we are as old in knowledge as it is in experience; we can stand on its summit and be lifted up in spirit as if we had grown to its height and expanded in soul to the whole reach of a broadened horizon. The glaciers have carved a castle for us whose ceiling the sun emblazons with cubic miles of filmy gold; the winds fling banners from the bleak peaks; the winters of ages have piled our partitions; the summers of centuries have grown the pines for our bedposts, and God has scattered the firmament with stars, to give us courage by contemplating their infinity, to measure our pygmy finitude against the giant but also finite mountains. The torrents and the pines sing to us, the birds and the busy squirrels speak to us, the rocks preach to us, and the mind is at stress with the muscles as the soul breathes deep with the lungs. So the mountains enter into our lives as we enter into theirs. We are lifted up in the high places, not beyond ourselves, but to our best selves.

But the sea preserves no marks of the finger of God, and its God has no fingers, nor any parts or members. The sea itself is neither new nor old, and has no past nor future—only an eternal Now. It has not even Here nor There, for all places are one to it; the very navigator has to locate himself, not by any fact, but by a mathematical abstraction, computed by tangents and cosines. The sea has no measure, for there is no unit to measure it by—no part to be applied to another part, and then to another, and the number of applications counted. Individuality, separateness, are illusions in the sea; the only reality is The One. There is one wave, and another wave, but presently they are the same wave, and then no wave. The drop of spray flashes a moment a separate unit, and then sinks back again into the undivided One. Since the world was, the sea is; but the spirit of God still broods on the face of the waters, changeless forever. Not the grasp of thought, but only the rapt vision of the Plotinist can apprehend the vastness of the sea. Its lessons are not written in a book, but whispered in mystic oracles. Its language, to humans, is the occult speech of the Orient. Its creed is not Christianity, but Theosophy or esoteric Brahminism. Its God is the Inscrutable; its destiny Nirvana.

And so we have the seashore to rest and forget; the sea to muse and dream; the mountains to work, to think, to feel, to grow, to be inspired and uplifted. And then the office and the shop, to grind once more our little cog in the great mill of life.

FIRST ASCENT OF THE MIDDLE PALISADE

By Francis P. Farquhar

◆

A FIRST ascent of a high mountain has a thrill all its own that can never be duplicated by any subsequent climb on that particular peak. There is an uncertainty about what is ahead and a consequent satisfaction when the doubts have been dissolved. It is a sort of game in which the climbers' resources are matched against the resistance of the mountain, and, as in any game, victory is cause for elation.

During the Sierra Club outing of 1920 in the Middle Fork of Kings River, the Middle Palisade was frequently in view, and there were many inquisitive glances cast at its fluted sides in search of a possible way up, for it was reputed to be still unclimbed. Closely resembling its neighbor, the North Palisade, it is one of the prominent landmarks of the Sierra Crest, attaining an altitude of 14,049 feet, ninth in order among the thirteen peaks in California over fourteen thousand feet. I was eager to attempt the climb in 1920, and examined it from directly across the cañon of Palisade Creek and again from the summit of North Palisade; but the opportunity did not then arise for making the attempt, and I reluctantly left the Sierra that year without any definite expectation of returning to that immediate vicinity in the near future.

In August, 1921, however, circumstances combined to bring me back to the Palisades. A magnet seemed to draw me in that direction, and I confess that I willingly submitted to its influence. With my friend Ansel F. Hall, Park Naturalist of Yosemite National Park, I left Giant Forest in Sequoia National Park on August 14th for a knapsack tour through the Kings River region. On the 22nd of August we reached Independence via Kearsarge Pass, and then for the first time definitely decided to visit the Palisades and try our luck at an ascent of the Middle Palisade. We took the stage from Independence to Bishop and left early the following morning for Andrews Camp, where we engaged horses to take us as far as the summit of Bishop Pass, which we reached at two o'clock that afternoon. There at twelve thousand feet we resumed our packs, and, keeping close to the base of Mount Winchell and the North Palisade, made camp at the head of Glacier Creek just at dark.

Next morning we toiled upward again with our packs and crossed the ridge east of the little lake at the head of Glacier Creek, discovering a pass that we do not recommend for general use. Pack-animals will not go that way without a donkey-engine and a steel cable. A scramble down a chimney for five hundred feet brought us close to the base of the Middle Palisade, and although it was still early in the day we concluded to search for a camp-site and then examine the mountain. We found an ideal spot at an elevation of about 11,500 feet. It was on a narrow step of the granite terrace, where a wind-swept thicket of white-bark pine (*Pinus albicaulis*) afforded shelter and assurance of a soft bed. A few dead branches and roots close at hand made a plentiful supply of fuel, and a dashing stream a hundred yards away completed the requirements of a most luxurious mountain camp. In spite of its apparent bleakness, it proved to be one of the most comfortable and delightful camps that either of us had ever enjoyed.

At seven o'clock on the morning of August 26, 1921, we left our little clump of *albicaulis* and started for the mountain. We traveled light, carrying only a little lunch and our cameras. The climb over the solid granite was quickly made, and we soon came to the pile of talus below the chute we had selected as the most promising route to the summit. Our examination of the mountain the previous evening had led us to the conclusion that one of the sharper peaks near the extreme right of the ridge was the highest point.

The climb up the chute proved easier than we expected. Our principal concern was to avoid injuring each other by dislodging loose rocks. We made good progress and were beginning to exult in what seemed the certainty of a successful climb when we received a blow to our expectations. A little pile of rocks on a ledge, and another above, and beyond still others, meant that someone had preceded us. We wondered who were our forerunners and envied them the experience of a first ascent.

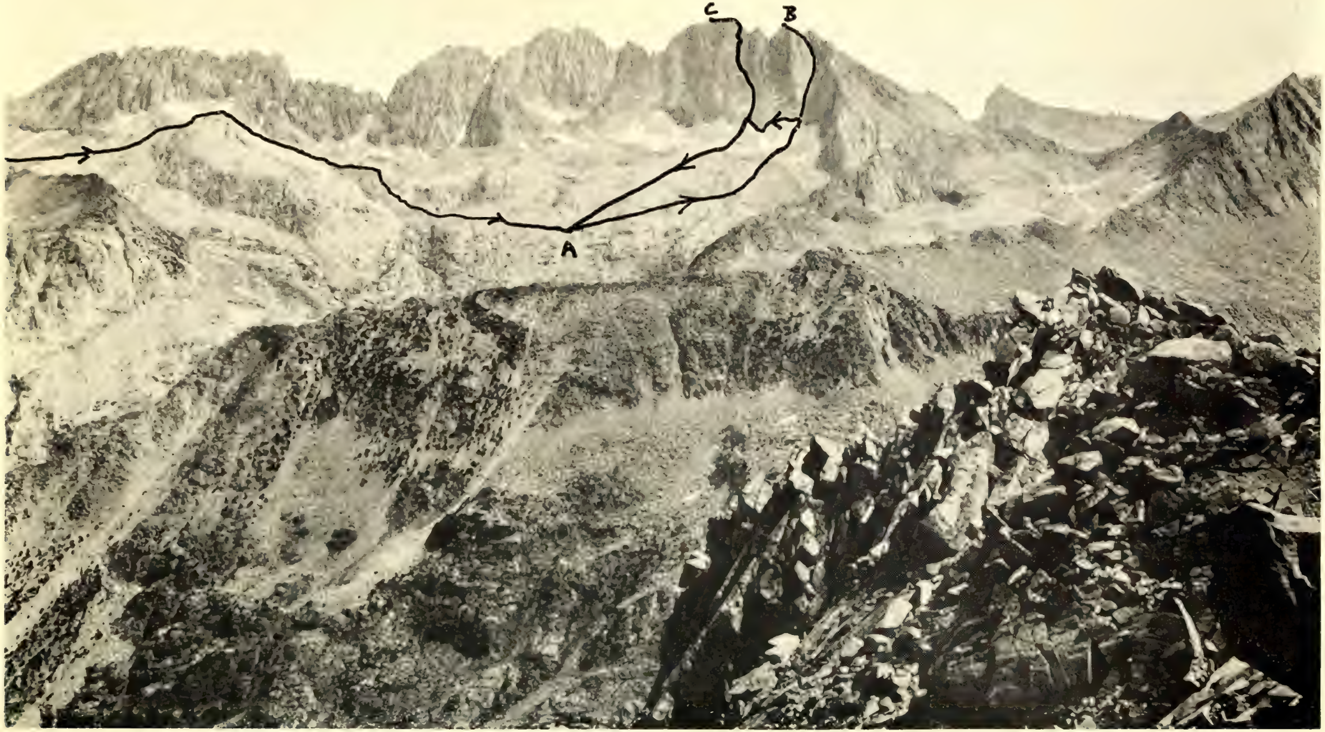
By quarter-past nine we had reached the top of the ridge at a point only a few hundred feet below the summit. Here several slabs of granite leaning against one another formed a triangular window through which we thrust our heads and beheld a large glacier far below us. This view revived our enthusiasm and we eagerly resumed the climb. The signs of our predecessors continued to the very summit, and as we climbed nearer to that point we beheld the monument that indicated their victory.

Increasing our speed, we reached the top at half-past nine, and looked upon a sight that filled us with mixed emotions. The view was spectacular enough, but it contained a quite unexpected element; for not only were we not the first to reach this point, but there, standing clearly before us only a short distance away to the northeast, was another peak unmistakably higher than the one on which we stood.

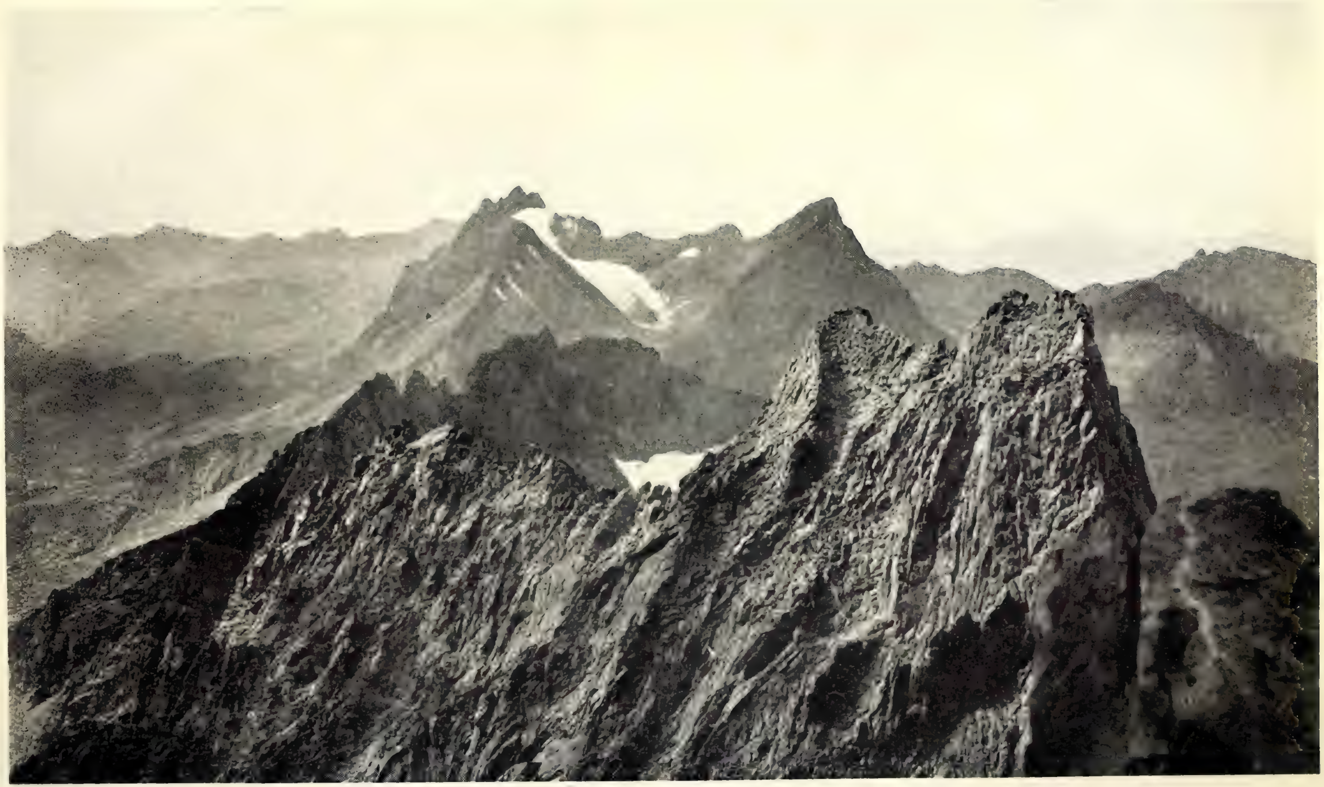
At first we were chagrined at our mistake, but presently another thought occurred that somewhat lifted the gloom; for as we looked at the gulf that separated us from the true summit we were confident that no one had passed that way. Although we had not reached the highest peak, neither, perhaps, had our predecessors; and at least the question of a first ascent was still an open one. With calmer feelings, we examined the monument and found a little can containing an envelope addressed, "To the Next Man." Within we found the following record:

> *July 20, 1919.—The undersigned made a first ascent of this peak this day and were disappointed not to find it the highest point of the Middle Palisade. We hereby christen this summit "Peak Disappointment." We made the ascent by the south face from the head of the chute just south of the peak. We entered the chute by crossing the knife-edge on its farther side.*
>
> *J. Milton Davies, San Francisco; A. L. Jordan, Berkeley; H. H. Bliss, Berkeley.*

We added our testimony to the record and lingered for a few minutes to enjoy the view, which we could not help feeling would have been more impressive if it were not for that point fifty or a hundred feet higher, so near to us in distance, but so far away by the measurement of time and effort. We began to discuss the possibility of attempting to climb the higher peak that day. It was not a very serious intention, but we thought we might at least go down and take a look at the approaches. By eleven o'clock we were back at the talus, where we stopped for luncheon and considered our next step. With a large part of the day still ahead of us, and, refreshed by a rest and a little food, our ambition increased and we determined to try the climb.



THE MIDDLE PALISADE, SHOWING ROUTE OF ASCENT, AUGUST 26, 1921
A. Albicaulis Camp; B. "Peak Disappointment"; C. Summit (14,049 ft.)
Photo by J. N. Le Conte



FROM THE SUMMIT OF THE MIDDLE PALISADE, LOOKING NORTHWEST TO THE NORTH PALISADE AND MOUNT SILL
Photo by Ansel F. Hall

The route that we chose for our second effort was by another chute parallel to the one we had ascended in the morning and occupying the same relative position to our goal. Almost immediately, however, we found that the climbing was much more difficult than before and we had to use the utmost care. Most of the lower ledges were covered with deposits of loose gravel so that we found it wise to climb side by side or take turns in standing by while gravel and rocks cascaded down.

It seemed a very long way to the top of this second peak, and the climb did not become any easier as we progressed. Several times we were discouraged and considered abandoning the climb, at least until another day. But the feeling of discouragement never seemed to attack us both at the same time, and on each occasion we turned again to the task and continued upward. About three-fourths of the way up we found, to our disgust, another small pile of rocks, and then we had little doubt that our predecessors on Peak Disappointment had also preceded us on the main summit.

Presently I found myself standing on a ledge to the right of Hall, who was in the main chimney. I had reached the point with difficulty and was now absolutely blocked from further progress upward. The way across the ledge toward Hall did not seem very inviting, and I studied the rocks carefully, with the thought of descending a few feet and rejoining him by a lower route. But the more I looked the more impossible seemed a descent, and presently I became unnerved and thoroughly scared. The longer I looked at the enormous depth below the worse I felt. Even the ledge to which I was clinging began to seem insecure, although, as a matter of fact, I had a perfectly safe hold. This feeling could not have lasted long, but I did a good deal of scared imagining during the time.

Hall, too, seemed to be in a situation from which further progress was doubtful. He was only about fifteen feet away, but that seemed a long distance to me just then. At length I pulled myself together, subdued my fears, and began to concentrate my attention on the firm granite close at hand, paying no heed to what was below. I promptly recognized how easy it was to work along the ledge, and in a moment I was across.

We then held a brief consultation and, after examining the rocks above, concluded that we had had about enough and definitely decided to go down. We looked around for a route for the descent, and then, instead of climbing down, we both began to climb up. It was one of those spontaneous impulses that sometimes occur at critical moments. We found tolerable handholds and footholds, and in a few moments were safely above our ledge; and from that moment, although the climbing was sometimes difficult, we did not stop until we reached the summit.

The route was somewhat complicated, and we frequently had to change from one chimney to another, traversing around the precipitous ridges. As we approached the summit we carefully searched for further evidences of a previous climb. We had not seen any ducks for some time and not a trace of any previous ascent was to be found near the crest. With a shout we greeted the summit as its first visitors. We subsequently learned that Bliss, Jordan, and Davies had been forced by a hail-storm to abandon their attempt on the day after their climb of "Peak Disappointment."

The view was superb. A slight haze over the distant peaks emphasized all the more strongly the nearer wonders. Dominating the whole scene was the jagged crest of the North Palisade, with its high-hanging glacier glistening in full view. The larger glacier at the base was not visible. In the opposite direction, at about an equal distance, was Split Mountain, otherwise known as the South Palisade. Lacking the snow, this view was not perhaps so spectacular as that to the north, but the more varied character of the scenery on either side made it almost as fascinating. Far below on the eastern side a glacier pushed out its moraine, filling numerous lakes with the milky water that characterizes glacial drainage. On the western side we looked down upon the deep gorge of Palisade Creek, with two large lakes immediately below us and a dozen or more smaller ones on successive benches higher up.

The summit of the mountain is an extremely narrow knife-edge. We had to use great care in moving about, as there were many large blocks just poised on the brink. Selecting a favorable spot, we gathered a few small rocks and constructed a monument. In this we deposited a Sierra Club register encased in two photographic film tubes placed end to end and bound with adhesive tape. We made the following entry in the record:

> *From camp at about 11,500 ft., climbed southerly peak this morning, only to find that it was lower than this one and had been ascended by a party in 1919. We descended*

2000 ft. to the foot of the cliff, ascended another chimney to the peak just south of this one, thence along the crest to this point.

Ansel F. Hall: University of California 1917; Park Naturalist, Yosemite National Park; Sierra Club.

Francis P. Farquhar: Harvard 1909; San Francisco; American Alpine Club, Sierra Club, California Alpine Club.

We took several photographs and then at three o'clock began our descent.

In our effort to reach the summit, we had neglected to leave any signs to indicate our return route. During the early part of the climb it had not been necessary, as there were no alternative routes. But now we wished that we had left ducks at the points where we had traversed from one chimney to another, for the rocks which we had studied so carefully on our ascent seemed to be missing and to be replaced by total strangers. We proceeded with deliberation and caution and seldom went down many feet without being positive that we were on the right route. Our progress was steady, and at length we reached the main chimney, where our chief concern was to avoid slipping on the gravel and hitting each other on the head with bounding rocks. It was nearly five o'clock when we reached the top of the talus, and we then proceeded as rapidly as we could over the huge rough blocks of granite until we reached the firm benches, where we increased our speed and arrived at our camp-site at half-past five.

The climb of the Middle Palisade is in many ways similar to that of the North Palisade. There was no place on the former that seemed to me quite so difficult or requiring such extreme caution as the snow-chimney of the North Palisade, but on the whole it seemed to me that there was a longer stretch of hard climbing on the Middle Palisade than on the North. We made no attempt to leave ducks to mark our route, partly because we lacked time and partly because we felt that anyone able to climb the peak would be quite as well off without them, as it would leave him to make his own choice in places where we had considerable doubt about the safest way.

A long sleep in our comfortable nests beneath the *albicaulis* refreshed us and the next day we descended to the lakes at the head of Palisade Creek. Here we encountered the Hamlin party from Buffalo, New York, who were pioneering over the unfinished route of the John Muir Trail and had just crossed the pass from the Upper Basin of the South Fork of Kings River. As we went back over their route we admired their energy and persistence, as well as the skill of their packers under Ernest McKee's leadership, for they had actually built a trail over that pass with their own hands. On the summit we found their record, in which they claimed the privilege of naming it Mather Pass, in honor of the Director of National Parks. With a farewell view of the Palisades we turned southward and made our way quickly during the next few days to Kings River Cañon and the Giant Forest.

AN OUTDOOR LITANY*

By William Frederic Badè

◆

WE praise Thee, O God, for the beauty of the morning,
For clouds and sunshine and autumn glory;
We praise Thee for temples not made by hands,
Where the symbols of Thy bountiful presence
Are graven upon Thy hills of light;
On valleys fair with blossom and fruit;
On forests blue with gossamer haze.
We praise Thee, too, for shining seas,
For the mystery and life of their teeming depths;
For wave and tide, and storm and calm,
That carve to beauty their far-flung shores.
We own Thy glory in purling streams,
That sing Thy songs in their cataracts,
And minister Thy peace in their placid pools.
O Thou who treadest upon the high places of the earth,
Companion the steps of the mountaineer.
May the grandeur and beauty of mountain trails
Dispose all farers thereon to nobleness;
That Thou in whom all live and move and have their being
Mayest nurture their hearts for lofty deeds.
So shall the glory of the earth on which we live
Renew our gratitude for Thy unfailing goodness.

**Written for the Sierra Club and used at an outdoor Thanksgiving Day service held under the club's auspices on the Berkeley hills, November 24, 1921.*

THE THUMB

By W. B. Putnam

I HOPE that I am not outraging the feelings of Sierra Club members and other mountain-lovers in advocating "The Thumb" as a name for a hitherto unnamed peak. Of precedents there are plenty. One only need mention amongst the high peaks Deerhorn Mountain, Fin Dome, Agassiz Needle, Columbia's Finger, and a host of others, to realize that many of these are named for their resemblance to natural objects. While these names are suggestive of the precipitous nature of the country wherein they occur, they are often commonplace. I realize that the term "thumb" is open to this objection, and hence my fear of offending mountain-lovers. Let me urge, however, the fact that it is uniquely appropriate to the peak in question.

Most striking from the east, in that most rugged region of the whole Sierra Crest from the North to the South Palisade, is perhaps the Thumb. It is not the peak that is most vividly remembered; it has not the individuality of the Palisades or Sill; but by the sheer sharpness of its profile it is the first to demand attention. The most favorable region for observing its thumblike appearance is the east side of Owens Valley near Big Pine, or, better, anywhere in the White and Inyo mountains surrounding Deep Springs Valley. For the last two and a half years I have had the fortune to live in the latter vicinity. More than a year ago, with a friend, I climbed Mount Sill, which is certainly from this east side the most interesting of all the wonderful cliffs of the locality. My thoughts since then have wandered more often toward the Thumb. This year I had three days: December eleventh, twelfth, and thirteenth. Snow was at a minimum and the weather promised to remain clear and mild. Everything determined me to undertake the risk of a winter expedition against the Thumb.

I can never thank enough my two friends who insisted on driving me a miserable nine or ten miles from Big Pine to McMurray Meadow at the foot of the range. A seventeen-mile hike with a heavy pack and an ascent of seven thousand feet would have wholly incapacitated me for my strenuous day to come. But in spite of the lift, which cut off over half the mileage, I was forced to discard most of my bedding at the foot of the grade. I arrived by the lake at the head of Birch Creek at about four o'clock. Never a more barren, drear, inhospitable camping-ground greeted winter traveler! A horse would undoubtedly have rejoiced at the abundant tuft-grass, while a man could but gaze helplessly at the superabundant rocks—nothing but rocks! Mushy snow pre-empted all the soft level spaces. I was forced to put my bed on the rocks. And where was the timber? At about eight thousand feet the scrubby birch in the bottom of the cañon gives way to scrubby willow. Birch Creek is exceptional, even among the streams of the east side, for its sterility. I was half an hour gleaning an armful of dead twigs. Anything but a cook-fire was out of the question. And such a night! Rocks, cold, and expectation of the morrow prevented any sleep.

Dawn at the end of the long winter night found me, nevertheless, readier to forget hardships and lose myself in the grandeur and sublimity of the scene. Birch Mountain crags rose from the ice of the frozen lake below me. In the center of the view towered the majestic mass of an unnamed peak above its glacier. Far to the right the Thumb, overlooking an intervening spur, bade me attempt its summit. It needed no second look. I sprang from my sleeping-bag, shuffled across the lake, and commenced to climb. Viewed from Temple Crag, the northern face of the Thumb had appeared inaccessible, while the eastern is a lofty cliff running into a southerly directed wall which connects with the cirque of the unnamed peak to the south. The only possibility was ascent by the gradual southern slope. To profit by this, however, one must surmount the cirque just referred to. I had noticed, after many snow-storms, the tendency of the snow to find lodgment in one place, indicating a probable breach in the wall. From various points of view, this had appeared first possible and then impossible. Toward the very last it took on a most forbidding aspect, although when finally there it offered no disappointment. With the help of my hunting-knife, I was able to cut steps in the hard snow. I should have had no accident there at all, had I not on my return trusted myself to a snow-slide. At the very first I lost control. From the corner of my eye I caught a glimpse of the unnamed peak, solemn and unmoved above its glacier. A feeling of helplessness came over me. I struck a rock and could in a far-off way hear myself utter a feeble groan. I was then hurried down a chute, but at the critical moment gained my footing on a very rocky moraine. Whether this place is free from snow at a more favorable season is hard to say. Probably yes, and, if so, there should be no difficulty in surmounting it. From there it is plain sailing to the top.

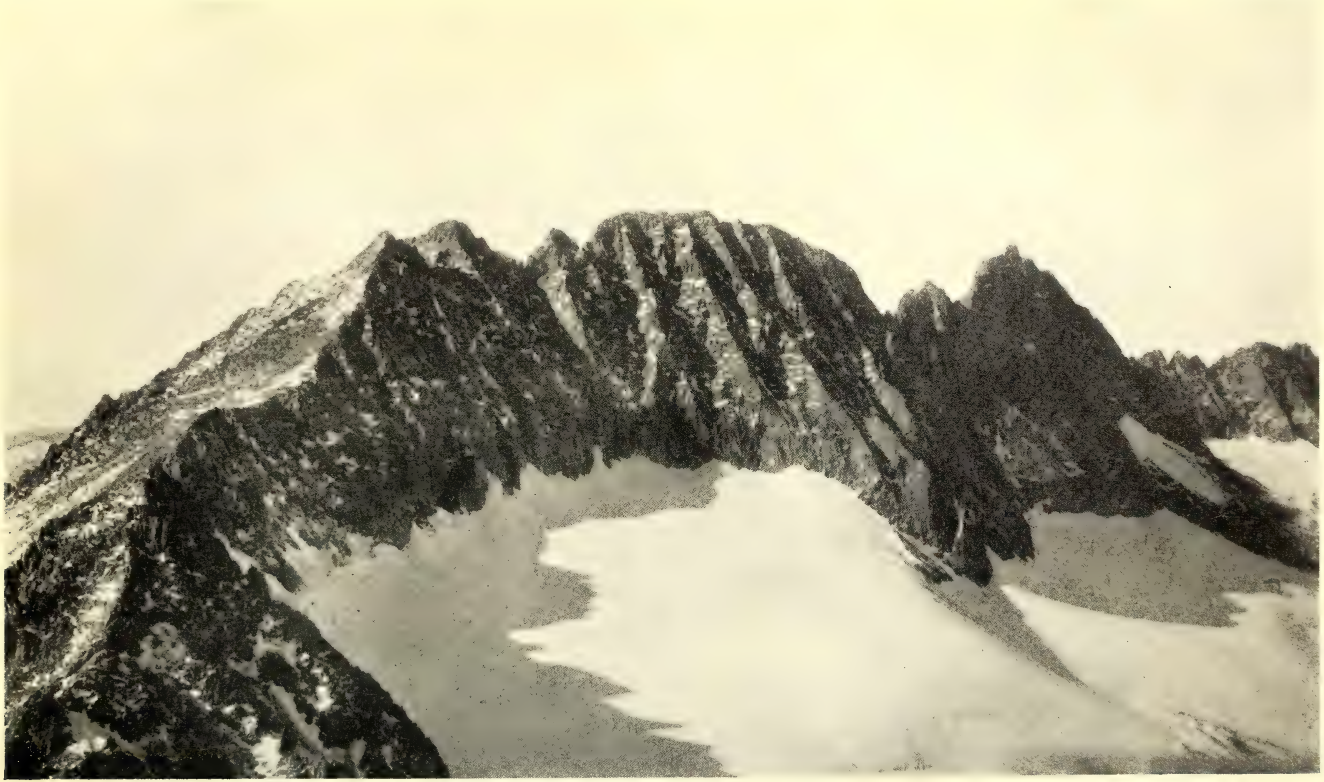
I must digress here to express an opinion rather damaging to the prestige of the Thumb. While I had no apparatus with which to make an accurate test, yet, from simple observation, I believe that it has not the relative elevation designated on the map. Birch Mountain and the unnamed peak cut the sky at points far too high for this. Very roughly, I should put the former at 13,800, the latter at 13,750 instead of 13,472, and the Thumb as low as 13,650 feet.

It might be imagined from this that the panorama is considerably obscured. So it is. As compensation, however, one gets that which is worth far more. One gets an intimate contact with a country unsurpassed in its majesty and savage ruggedness. What the North Palisade is to the view from Mount Sill, the Middle is to the view from the Thumb. One gazes on it with less of the awe and terror inspired by the former. One can comprehend more of the beauty of its sculpture. One can marvel at the symmetrical fluting of the southern part; one can contemplate the black sheerness of the more distant northern one; the whole set off in dark contrast by the glistening glaciers at the foot. It is this Middle Palisade which so gloriously obscures the view! Those which to the south do likewise have not its splendor. Birch and Split mountains are bulky and ponderous by comparison. So this is perhaps the least interesting view. Golden cliffs light the western prospect, while Mount Sill, sharper than from elsewhere, lends its individuality at the north. Thence, passing east by the tips of Mount Humphreys and Mount Tom, across Owens Valley one views the Whites and the Inyos, and beyond them range beyond range of the desert mountains.

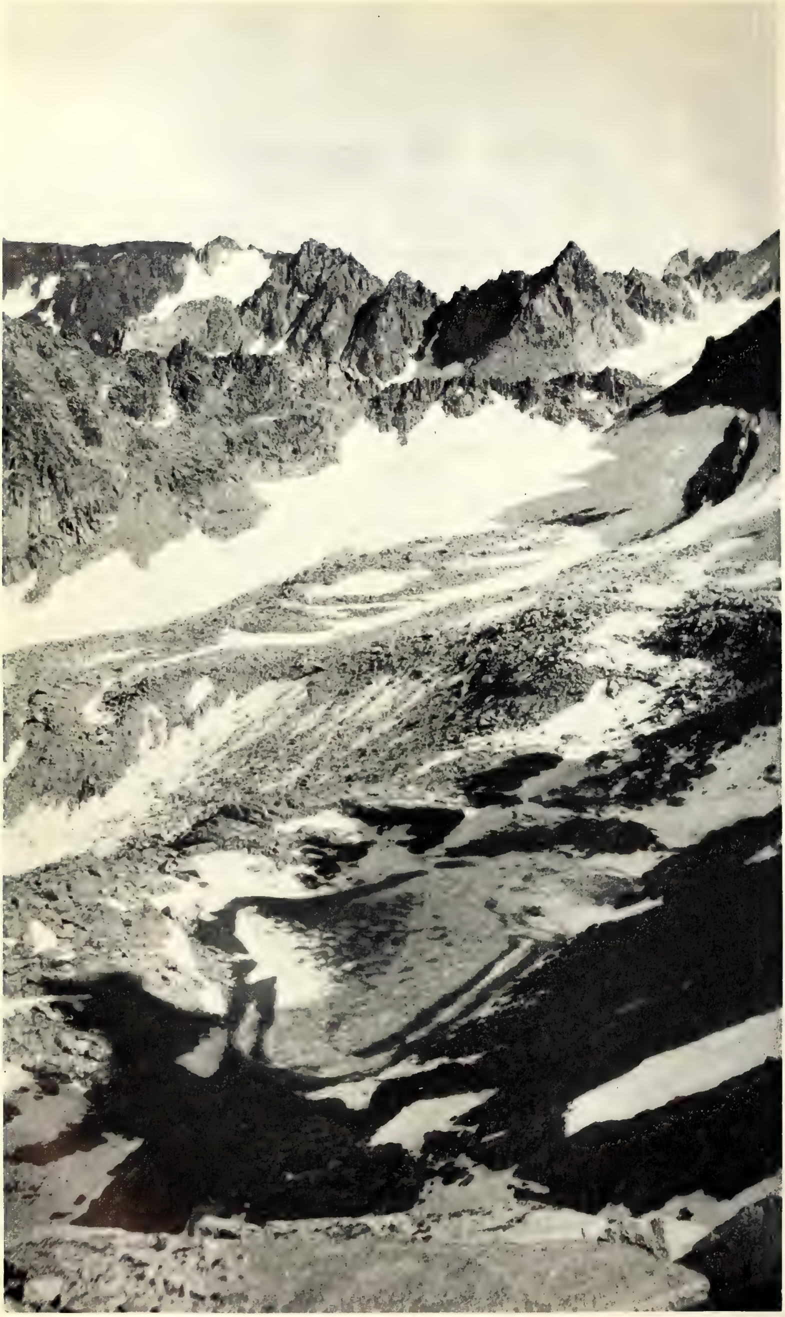
I found no trace of man on the summit and left little or none myself. Being too fatigued to erect a monument from the heavy granite there, I built only a little cairn. Within I deposited a memorandum of the expedition inside the most water-tight container that I had—a court-plaster can. There was little time for exploration, unfortunately, as I desired before sunset to climb the shoulder of the mountain to the northeast, where I might obtain a close view of the familiar profile of the Thumb. Ascent from the north would be impossible or very difficult at best. While some of the chimneys seem promising, they are probably of that numerous variety typified by the northeast chimney on Mount Humphreys, just to the south of its summit. This chute appears to be a gradual incline ending on the surface of the glacier, but in reality it is terminated by a precipice almost double its own height. The low cliffs of the wall to the west, on the other hand, are penetrated by a number of good chimneys, and even were these to fail, by continuing well to the south and then returning, all obstacles would probably be avoided. The Thumb, therefore, is accessible both from the east and the west sides of the crest and is not to be classed with the more difficult and dangerous peaks of the Sierra.

I reached my goal on the northeast mountain when the sun was just over the top of the Thumb. By shading my eyes, the familiar profile was revealed in astonishing boldness—a gigantic thumb, placed horizontally, with the tip held aloft! Glorify this very homely figure with imagination. I should never use it but that this peak baffles adequate description. As I gazed, with the view mellowed and fused by the uniform shading, I remembered the wondrous contrasts following snow-storms, when the rich black of the east face and wall was edged by the silvery white of the snow above. Again and again I shaded my eyes and gazed, but finally plans for moving camp triumphed and I rushed down the mountainside.

Hastily gathering together my pack at camp, I coasted rapidly down the trail. From time to time I rested, at first to admire the great familiar band of soft purple shading into pink in the east, and later, in the moonlight, to let memories of a wonderfully worthwhile day crowd in upon me. I camped that night at the base of the escarpment, where my blankets had been cached. The next morning a few hours' hike brought me to Big Pine. In retrospect, the trip and the climb seem far less eventful than many undertaken with far less risk. Yet there is a unique thrill in standing, the first, on a crag near fourteen thousand feet, in midwinter and alone.



THE MIDDLE PALISADE FROM "THE THUMB," SHOWING THE EAST FACE AND GLACIER
Photo by W. B. Putnam



PART OF THE SIERRA CREST BETWEEN MOUNT DARWIN AND BISHOP PASS
1. Thompson Ridge; 2. Mount Thompson; 3. Mount Powell
Photo by Chester Versteeg

BISHOP, PIUTE, EVOLUTION, AND DUSY CREEKS VIA MUIR PASS

(AROUND THE MAGIC CIRCLE)

By Chester Versteeg

❦

LONG shadows crept over frozen lake and snow-filled cirque far below. Pinnacle and rampart stood fixed in outline under a clear sky. Here we were, two lone mortals, far from camp, much farther from the haunts of men. Perhaps no human foot had ever trod this part of the Sierra Crest before. With the exaltation of that hour unforgotten, I essay a description of the consummate grandeur found in the heart of the Mount Goddard quadrangle. For this is a story of things scenic, historical, geological, and perhaps practical, gleaned during the trip of my wife and myself in that part of the High Sierra in the latter half of July, 1921.

At Laws we reloaded the outfit and traveled nineteen miles by auto stage via Bishop and up Bishop Creek on a good road to Andrews Camp. Andrews is situated on the South Fork of Bishop Creek, a mile above the junction of the South and North forks. The meals are entirely satisfactory. Tent-houses and a few cabins accommodate fifty people. But Andrews is more than a mountain camp. It is the beginning and the end of the magic circle. The mountaineer leaves the auto and, at an altitude of eighty-one hundred feet, begins travel with pack-train or knapsack. Whether he is headed for Piute Pass on the North Fork or for Bishop Pass on the South Fork, he is at once within the shadow of that mighty Sierra wall running from the Palisades to Mount Humphreys. Le Conte called it "the finest portion of the crest of the Sierra Nevada Mountains, their scenic culmination, their final triumph."

Pack and saddle animals rent for $1.50 a day. Our pack-train boasted one of each, both horses. From the saddle-horn were suspended two small dunnage-bags, while extra wraps were tied to the back saddle-strings. The saddle-horse actually carried a human pack less than one-third of the total distance. One of the privileges of pack-animal travel when you haven't a professional packer to bother you is that of ignoring common valley names and renaming your animals as environment dictates. When our animals were in motion the cook contended earnestly that the gray and the roan responded best to the names of "Annie" and "Roonie"; but the packer maintained that "Flapjack" and "Jerkey," while not productive of increased speed, at least fell on attentive ears.

Our route led back a half-mile to the old road up the North Fork of Bishop Creek and past the Southern Sierras power plant at Bishop Park. Here the trail leaves the road just below the junction of the North and Middle forks, the auto road continuing up the Middle Fork past the Wilshire gold mines and to Lake Sebrina. The trail, at a steep grade, joins and climbs up the tumbling cataract of the North Fork. North Lake, the first body of water, is disappointing, being a quarter-mile length of dirty pond surrounded in part by marshy shores. We stopped for lunch in an ideal meadow a short distance above the lake, where the only storm of our eighteen-day trip, hail alternating with rain, the flash of lightning, and the heavy roll of thunder, decided us to make it an overnight camp.

Perhaps here a reference to one item of our equipment will be pardonable. The writer, after considerable experience, has finally found a kaiak that has proved the decisive factor in maintaining a proper balance. These wooden kaiaks are of the usual oil-can-box size, but made of end pieces three-quarters of an inch in thickness and side and bottom pieces nine-sixteenths of an inch in thickness. At the ends, completely around the box, are nailed strap-iron bands three-quarters of an inch in width and an eighth of an inch in thickness. The adjustable strap-loops which hook over the pack-saddle crosstrees are riveted to the kaiak and continue on down to and across its bottom and three-fourths of the way up the other side. These straps are an eighth of an inch in thickness and one and a quarter inches wide. The kaiaks weigh eleven pounds each, an extra weight for the animal, but a remarkable medium for maintaining a load balance and unbreakable tables, seats, or cupboards around camp.

Our next camp was on the shore of an unnamed lake, popularly called "Loch Leven," located on the North Fork of Bishop Creek about three miles below Piute Pass—a beryl-green sheet of water more than a quarter of a mile long and three hundred yards in width. Dwarfed alpine white pines crowded down to the water's edge, like desert travelers around a water-hole. Our travel was almost entirely in the belt of tamarack and alpine white pine. Since the latter, scientifically *Pinus albicaulis,* also has the common name of *white pine,* and is often confounded with the white pine, *Pinus flexilis,* it is well to note that *Pinus flexilis* is found in the Sierra only in the alpine section of the eastern wall between Bloody Cañon and a point opposite Lone Pine. Here at the lake we were rewarded with a catch of a single plump Loch Leven trout, thus identifying the body of water upon whose shores we were camping. Several small lakes were passed *en route* to the summit of Piute, none of which showed evidence of finny inhabitants. A wide but well-packed snow-bank on the eastern side of the pass was easily negotiated. Piute Pass (11,409 ft.) compares favorably with Cottonwood and Mammoth passes as one of the easiest in the Sierra.

The view westward, with the Pinnacles running at right angles to the line of vision, reminds one forcibly of the Great Western Divide viewed from Army Pass. Space will not permit a description of the beauty of the snow-masses of the Glacier Divide, which forms the south wall of Piute Cañon and runs westward from the Sierra axis. Remnant glaciers are tucked away in cold amphitheaters; snow lakes stand in the shadows of immovable ramparts. But Mount Humphreys (13,972 ft.) cannot escape a word. We walked a mile north from the saddle of the pass. Humphreys, shaking off the last vestige of timber from its flanks, its giant base rooted deep into the backbone of the Sierra, dominates the Buttermilk Country on the east and the drainage of Piute and Desolation creeks on the west. More, it commands the very heart of the great Goddard quadrangle. The most striking view of Humphreys is obtained from the rock plateau on the north side of Piute Creek near where Desolation Creek tears a gorge in the bank. Along the base of Humphreys on its southwestern side is a row of talus fans reaching upward several hundred feet, fed by corresponding rock-chutes of a gray color. Above these talus fans and across the southwest face of Humphreys is a "chocolate-colored band 1500 feet in thickness, reaching to the crest, the upper edge scalloped and fluted. Above this towers the summit, 1000 feet higher, and terra-cotta in color." The summit, eight feet square, was trod for the first time in 1905 by Messrs. J. S. and E. C. Hutchinson, unless, as J. S. Hutchinson picturesquely puts it, "in the early Jurassic period, before the mountain was fully sculptured," some lone hunter, paddling around in mid-ocean, nosed his boat against its gently sloping sides. Humphreys is worthy of a Whymper or a King.

The stream that drains Desolation Lake empties into Piute Creek through an unnamed lake, popularly called "Golden Trout" Lake, three miles west of Piute Pass. It is a beautiful sheet of water, much resembling the main Kearsarge (or Sunset) Lake, with the added and unusual effect given by the cataract of the Piute tumbling into the lake, with a resulting foaming and rippling current visible a hundred yards out from shore. The alpine trees furnish some shelter and ample firewood. Campers will find the headland directly east of the mouth of Desolation Creek an admirable camping-spot and viewpoint. Fifteen-inch golden trout abound, responding readily to the lure of the black gnat and brown or gray hackle. In fishing the creeks the advice of Emerson Hough was safely ignored; in the lake trout refused to become educated even after the third "kill."

Piute Creek was called the North Branch of the South Fork of the San Joaquin by the sheepmen of early days. How continuously are we reminded of the apathy shown toward the mountains of California between the sixties and the nineties—between the days of Whitney, King, and Brewer and the days of Le Conte, Solomons, Coit-Brown, and Colby! That apathy was due to the refusal of the state legislature to continue the work of the California Geological Survey. It was left to the sheepherder to first thread a considerable part of the High Sierra. During this period, and in mighty protest against the indifference of government and the neglect of the Sierra, stands the rugged figure and the thorough work of Muir. Le Conte, in his map published in the SIERRA CLUB BULLETIN,* to clear away confusion, named the creek Piute Branch.

As the traveler proceeds down Piute he glimpses through tamarack forests the half-dozen snow-covered residual glaciers of Glacier Divide. The tamaracks plant feet in granite detritus or granite solid and, battered by Sierra winters, still defy the elements that gave them birth and continue to give them life. Along the course of the stream lay here a meadow circlet of empurpled lupines, there a fallen forest, avalanched from the cañonside and scourged with fire. Down the cañon the eye picks out the course of the rollicking, happy Piute, the stream ultimately forced to turn southward by the bulk of the many-fingered Pinnacles standing in blockade across its course.

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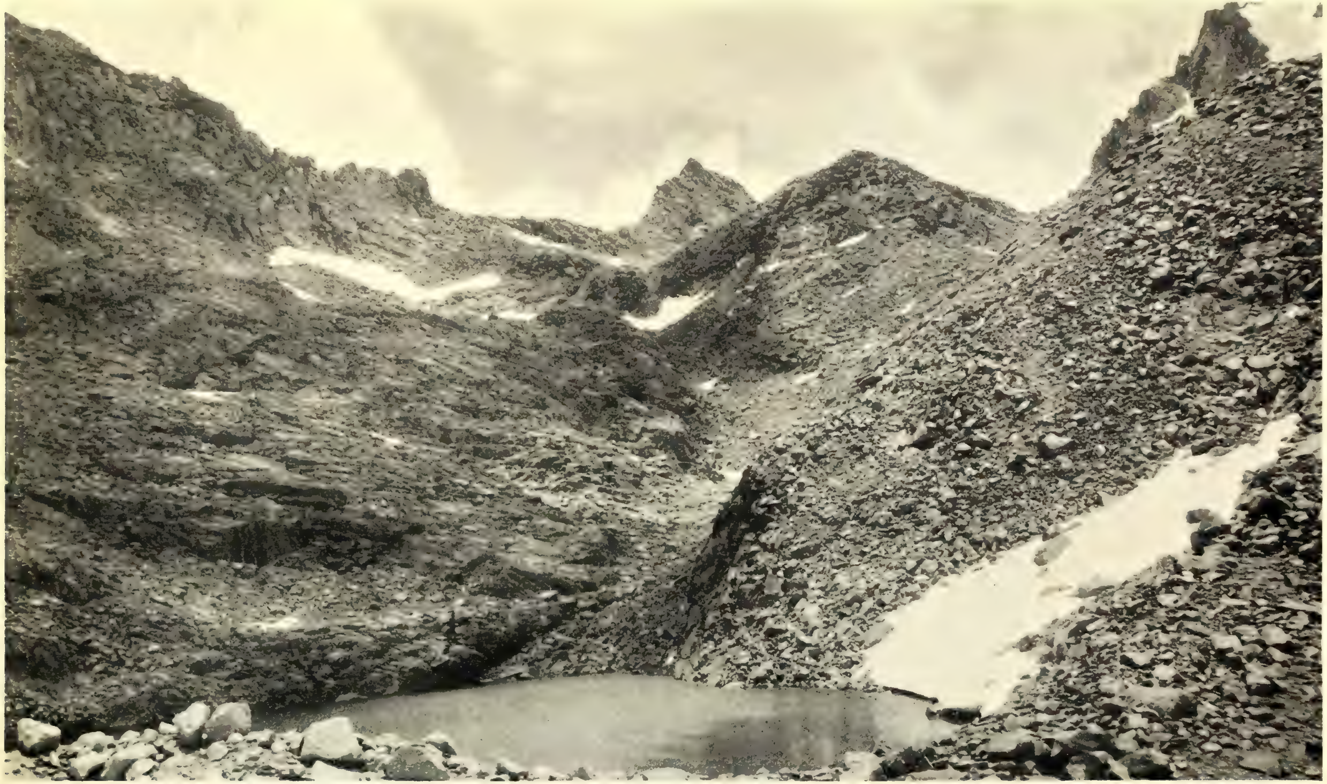
*See volume V, No. 1, p. 18.



CUL-DE-SAC NORTHEAST OF THE DARWIN GLACIER
Photo by Chester Versteeg

MOUNT HAECKEL FROM THE SUMMIT OF MOUNT SPENCER
Photo by George J. Young

French Cañon, coming in from the north, joins with Piute the waters of an unnamed lake basin lying beyond the divide just northwest of Desolation Lake. It mouths its way by seven channels into the Piute, and the traveler is wise who sets as his objective the broad meadow on the north bank of the Piute three hundred yards ahead and, ignoring an indifferent trail, mushes through. Campers reported the golden-trout fishing in French Cañon splendid and the trail fair. Through the level meadow below the junction the encouraged Piute flows between broader banks. From here one sees, back beyond the junction, Pilot Knob (12,237 ft.) standing guard, a glorious pyramidal sentinel, another East Vidette.

For the next three miles the stream course is typical of major cañon flows. Then, almost without warning, it begins its flight through a three-mile gorge, and the traveler pushes his animals up and down a winding trail, now toward the creek, now back toward the cañon wall—a trail blasted in places through solid rock, but withal a well-made one. The sensation of crossing suspension-bridges over Piute and the South Fork of the San Joaquin, an experience wherein both animals and men are prone to increase their speed to a dog-trot when half across, will be remembered by the members of the 1920 club outing.

Our feet now trod historic trails. In July, 1895, at a point above Jackass Meadows on the South Fork, Theodore S. Solomons and Ernest C. Bonner (see references below) relegated their pack-animal outfit to another and prepared for the first exploration of the headwaters of the South Fork of the San Joaquin. The South Fork was then represented on the map of the county in which it lies "partly by blank spaces and partly by townships drawn in such a way as to indicate to one made wise by bitter experiences that the topography thus indicated was mythical, and the purported survey of the Land Office fictitious and fraudulent."

Evolution Creek drops into the South Fork of the San Joaquin at the foot of Emerald Peak, a bright-green mass of highly metamorphosed sandstone. Solomons says of these falls, "the most striking and magnificent I have ever encountered in the Sierra, excepting only those of the Tuolumne Cañon." From McClure Meadows we obtained our first glimpse of the Evolution group of peaks, thrilled with the joy of studying them first-hand, the living models of old photographs. On the excellent Muir National Trail an abrupt climb of a thousand feet brought us to the shores of Evolution Lake (10,990 ft.). With a cry of delight we located the alpine white-pine clump close to the lake edge where Walter Huber and party camped in 1920 before the first ascent of Mount Haeckel. A rock peninsula jutting from the eastern shore of the lake nearly divides the latter in twain. On the south shore of this peninsula, a hundred yards off the trail, there is a good camping-spot that is fairly well sheltered and with plenty of feed for a small pack-train, enough firewood, and a commanding view of the lake. From atop the peninsula the alpenglow over the Evolution group and the dying sunset away down the course of Evolution Creek beggar description. This in detail, because it was our experience that campers rushed through the Evolution Basin headed for a lower-altitude camp, thus missing the intricate beauty that a two-day layover permitted us to enjoy.

Solomons named the Evolution group in 1895. The U. S. Geological Survey map of later years erroneously locates Mount Wallace on the same spur as Darwin, while, if the namer's record and map are to be accepted, the true Mount Wallace is the peak now marked on the Survey map as Fiske, and the true Mount Fiske is midway between Mount Huxley and the Fiske of the present Survey map. A twelve-hour trip around the north side of Darwin revealed a chain of five lakes of an ethereal, milky blue, fed by the melting ice of the Darwin glacier—lakes whose shores are so abrupt that the underwater shore-line disappears two feet out from the water's edge. They drain a cul-de-sac formed against the very Sierra Crest, which in rugged steepness and hard grandeur is difficult to equal in the Sierra. The view overlooking the Bishop Creek (Middle Fork) watershed from the Sierra Crest near the Darwin glacier is appalling in its sweeping magnificence. Here frozen lake, snow-massed cirque, rampart, minaret, and peak vie with one another in commanding the climber's attention.

Solomons and his good friend Bonner, after their climb of Mount Goddard, followed the Goddard Divide on its southern side eastward in the hope of locating the key to the coveted route from Yosemite to the Kings. They chose a route down "Enchanted Cañon," now called Disappearing Creek, and found it impractical for animal use. Ten years later Le Conte, exploring farther than Solomons above Evolution Lake, stood on the summit of the present Muir Pass and, looking down the gorge leading to what is now

Le Conte Cañon, declared it impractical as a pass. But further exploration, perseverance, and money have carried Muir National Trail up the gently sloping western side of Muir and down the rugged gorges of the eastern watershed. In one place the trail has been blasted and chiseled, not out of, but into, the native rock, leaving a granite roof over the traveler's path.

Muir (12,059 ft.) is not a high pass, comparatively speaking. But altitude alone does not always make for scenic grandeur of a pass. Muir is more than commanding. It is the culminating charm of the magic circle. It is the prince of Sierra passes. Any doubting mountaineer needs but face the four points of the compass atop of Muir. Westward above the shores of Wanda Lake rises the black pugnacious head of Mount McGee. Directly south of McGee the Goddard Divide, which runs from the observer's feet west by slightly south, has ended in the final black sawtooth that is Goddard. At the feet of Goddard abrupt cirques, which have eaten into the divide from the north, shelter their perpetual snows. The Goddard Divide between the peak and Muir is granite in substance and is reddened at the crest by iron. South from Muir runs a "series of parallel gorges separated by crested divides, the whole black as night and formed of slate, through which run dikes of a very old lava." Southeasterly the Black Divide leaves Muir and becomes the western bulwark of Le Conte Cañon. Looking eastward across the head of Le Conte, the eye meets the Sierra backbone running diagonally across the line of vision. Due north the Goddard Divide continues from Muir Pass to a junction with the Sierra Crest at Mount Fiske. Here, then, is a combination of five massive ramparts and divides centering on or near a pass and radiating in diverse directions. Nature has not here created a masterly surprise for the mountaineer only. The geologist is delightfully mystified by the records of "lavas, basalts, and other volcanic materials erupted not by volcanic action, but through fissures and in granite and aqueous formation." Here he finds "granites, basalts, slates, and lavas overlying, underlying, and horizontally contiguous with one another, in obvious nonconformity with theory and precedent."

On the western side little snow was encountered. On the eastern a wide bank was fairly well packed and easily negotiated. A snowbridge crossed the gorge in the upper part of Le Conte Cañon, just below Helen Lake. A hoof-hole through which one could see turbulent waters warned us that the bridge was weakening. We started from our peninsular camp on Evolution at half-past one and arrived at Little Pete Meadows by dark, a distance of about thirteen miles. Members of the 1920 club outing have questioned the possibility of this. The answer is that with us weather conditions were ideal.

After visiting Grouse Meadows and Palisade Creek, our return trip took us up the Dusy branch of the Kings and over Bishop Pass. We had been warned of the deficiencies of the Dusy trail—the one trail in the Sierra that has no short-cut. The first sheepmen or cattlemen in these parts must have been imbued with the one idea of getting from Dusy Basin to the grassy floor of the Kings in the shortest possible time, little reckoning that the return must some day be made. All travelers to this date have stubbornly refused to vary the grade. The first quarter-mile up Dusy from the Kings is like most steep trails. Then for a half-mile animals scramble up rock gullies, leaping kangaroo-like over nearly perpendicular rock masses standing in places two or three feet high athwart the trail. Then, as a bit of tantalizing reminder that all trails are not bad in the Sierra, one debouches upon a level cañon-floor suspended midway between Dusy Basin and the Kings. This is short-lived and the same old punishment begins for just a little longer and a little steeper half-mile. No traveler is reckless enough to ride either way. Mules capable of carrying 225 pounds pack only a hundred pounds going up and considerable less than capacity going down. It is not uncommon to report a pack-animal's broken leg before the end of the trail.

We were thrilled with the unsolicited statements of two different packers that they hoped the Sierra Club would go over Bishop Pass and Dusy trail on its next Annual Outing. "It takes the Sierra Club to get trail work done in these mountains," was the candid comment. No one knows better than the officers of the Sierra Club the meager trail funds allotted to our national forest supervisors. The writer has by circular letter brought the condition of this trail to the attention of the supervisor of the Sierra National Forest, the trails committee of the Sierra Club, the Bishop Chamber of Commerce, and Bishop newspapers. While Dusy Creek is within the Sierra Forest and Fresno County and Bishop is in Inyo County, with its own Inyo National Forest problems, the merchants of Bishop are beginning to realize that Bishop Pass is no longer a byway, but now a highway, into the heart of the Sierra. As such a highway, it in considerable measure spells prosperity for Bishop.

A half-mile above the lower of the Dusy Lakes, where the creek runs quietly between narrow banks of deepest alpine green, we made camp. Down Dusy Creek, away across Le Conte Cañon, the mighty Black Divide was already lost in the dying day. Winchell and Agassiz Needle, twin guardians of Dusy Basin, gradually withdrew eastward from our fire circle. Here is an alpine camp the memory of which makes the blood run fast.

The trail down the north side of Bishop Pass is steep but well graded. Long Lake, at the head of "navigation" on the South Fork of Bishop Creek, is smaller than any of the three upper Rae Lakes with which it has been compared. Its peninsula and two or three islands are covered with rich green verdure, blue waters and gray-granite shores making a striking contrast. A mile below Long Lake the traveler picks up an old road and passes the remains of a saw-mill surrounded by stumps and timber-slashings. At South Lake, two miles below, the wooden dam of the old California–Nevada Light and Power Company still renders tribute to its offspring, the Southern Sierras Company.

Eight miles below us at Andrews Camp the two ends of the magic circle were to be joined. Within that circle are countless amphitheaters yet unexplored—countless "trails" yet untrod. Here are the sources of two great rivers whose courses thousands behold, whose springs few have ever seen. Twilight purpled the hills about Owens Lake as our train sped southward. Olancha Peak, the first to greet us, was the last to say good-by.

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EXPLORATION OF MOUNT DARWIN

By Robert M. Price

FOR several years the members of our small party had discussed and keenly anticipated a time when we could leisurely stroll through the roughest and finest part of the High Sierra somewhat later in the season than the time of the Sierra Club's annual outing, subject to no fixed itinerary, and free at our option to criticize the management or vilify the cook. On reaching Lone Pine from Reno, via Bishop, on August 1st, the first stage in the dream appeared to be realized, for, in striking contrast to the usual experience and contrary to our expectations, we found our live-stock, two strong pack-mules and a saddle animal for emergencies, already rounded up, the pack outfits repaired and ready, and our supplies awaiting us at the railroad station. These favorable omens, combined with an early start on the second and the certainty that we were all in fairly good physical trim, raised our spirits to a pitch of youthful enthusiasm. But five miles of dusty road, five more of hot trail to Carroll Creek, and fifteen or more miles up a steep, heavy trail, without water for ten of them, with the desert sun seemingly concentrated upon us, rather dampened that enthusiasm and suggested that there were some compensations in traveling in the automobile that we had so recently left.

We had planned no record-breaking climbs, no thrilling ascents, but rather an easy, leisurely trip, with fatigue reduced to a minimum. In a substantial degree we carried out our plans. Most of our camps were reached by noon or early in the afternoon, and seldom were we more than comfortably tired. The mountains were unusually free of snow and the streams much reduced, but, while this made traveling less difficult, it detracted from the alpine character of the mountains and diminished the freshness of the meadows and the beauty of the watercourses.

Army Pass had been selected as our probable route over the summit, with the possible alternative of Whitney Pass, which appeared so distinctly and enticingly delineated upon our topographic sheet; but we learned that the trail over the former had been impassable for several years and that the latter had been closed since the Campbell-Abbot expedition of 1909, and we were therefore obliged to deviate some distance to the south over Cottonwood Pass, locally known as Chicken Spring Pass. Rumors reached us in Lone Pine of a shorter route to Big Whitney Meadow, by King Pass, but, upon the advice of our outfitter, Mr. Chrysler, we selected the southern route.

The closely cropped meadows at our first camp on Big Cottonwood Creek gave us some solicitation for our animals, but neither that nor the weariness resulting from our hard day's work, the most trying of the trip, seriously detracted from the keen enjoyment of being free in the open or from the soundness of our sleep. It was a great relief to be away from centers of civilization, or, as the cowboy poet expresses it, "I loved my fellow-man the best when he was scattered some."

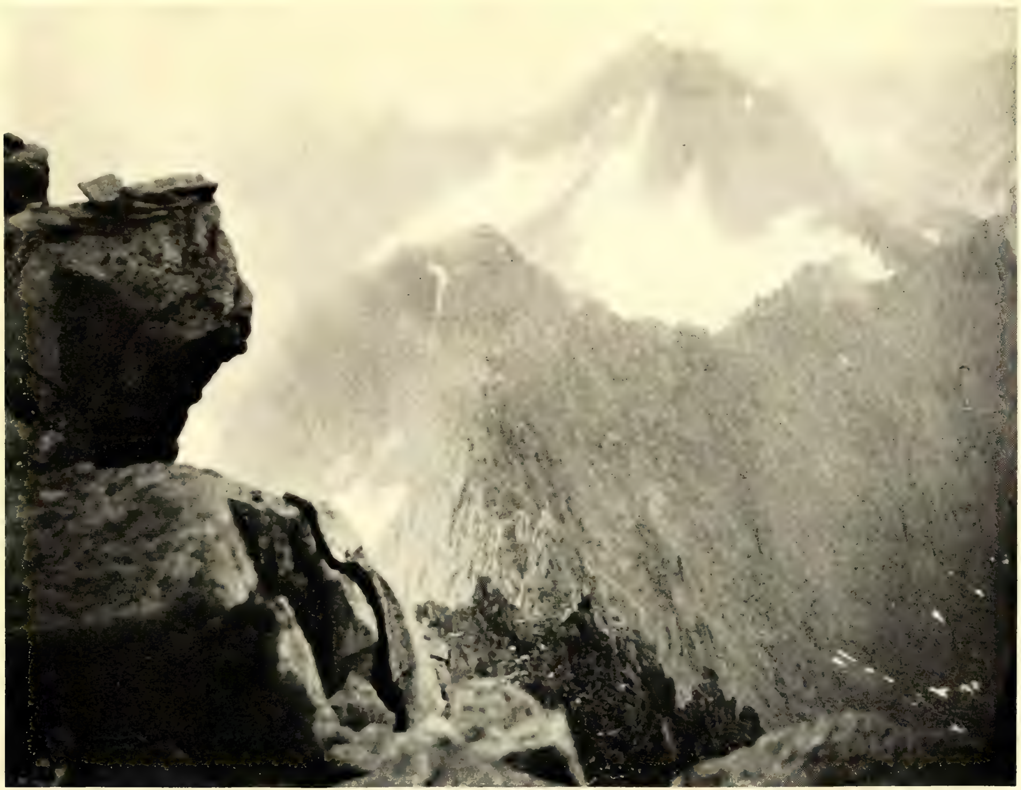
Our route lay mostly over well-known trails, and I will only outline it to Rock Creek, Whitney Creek, Sandy Plateau, Tyndall Creek, Shepard Pass, Junction Pass, Bubbs Creek, East Lake, South Fork, Middle Fork, and so on to Muir Pass, but I must in passing briefly mention our camp on Whitney Creek. Of all delightful and ideal stopping-places, that on Whitney Creek was unrivaled. We camped about three miles above Crabtree Meadows on high ground near the timber-line, just above a little unnamed lake. Grass was abundant and fuel readily at hand. Over the lake, framed by the cañon walls, the Kaweahs shone bright in the early morning light or lowered darkly in the evening shadows, and just east of us rose the majestic gothic slope of Mount Whitney, strikingly impressive in the light of the setting sun.

The trail from Tyndall Creek over Junction Pass is somewhat disheartening. After ascending for miles along a gentle slope up Tyndall Creek to Shepard Pass, it drops twelve hundred feet on the east side, only to climb up again about twenty-two hundred feet to the crest between Mount Keith and Junction Peak, over thirteen thousand feet above sea-level, the highest pass in the Sierra. We approached the pass in a storm. Oceans of dark cumulus clouds were drifting up from the southeast, but as we reached the summit the never-to-be-forgotten view to the northwest burst upon us in a glory of sunlight and shadow—cañon after cañon, peak upon peak, as far as the eye could reach.

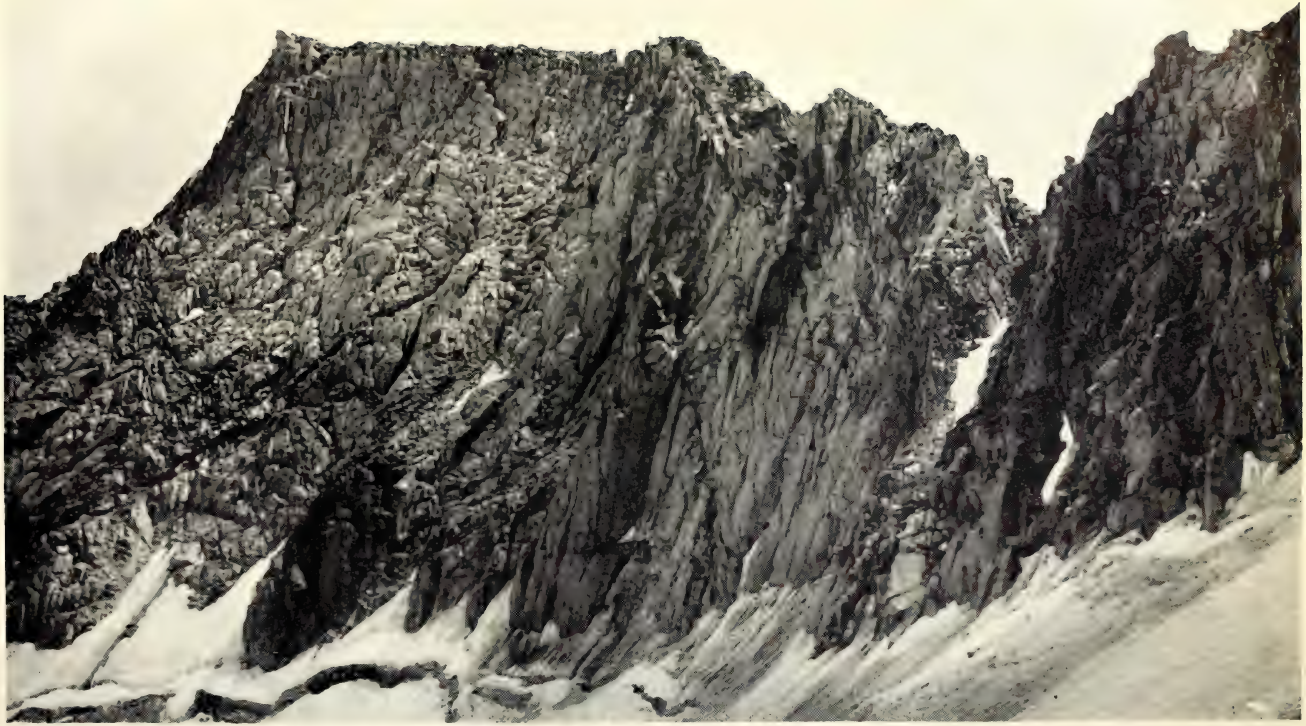
When passing the mountain made famous by Clarence King in his fascinating description of "The Ascent of Mount Tyndall," a strong desire seized us to discover, if possible, the precipices and ice-tongues which were the occasion of his thrills. The mountain has been ascended many times, and, from our position along the trail, no serious obstacles were apparent, yet from the summit of Mount Brewer, a few days later, we could easily imagine the difficulties he encountered in descending the ridge extending southeast from Mount Brewer and in crossing the Kern-Kings Divide.

From the Vidette Meadows to the South Fork we found the trail in good condition, greatly improved through the efforts of Mr. G. O. Knapp, of Santa Barbara, who has a private camp at the mouth of East Creek. We were informed that Mr. Knapp had about completed the construction of a good trail from Lake Charlotte to Rae Lake. His work should be highly commended by the members of the Sierra Club. The South Fork Cañon and the trail up to Tent Meadow were found hot and dusty, and at Simpson Meadow the beauty of the flora had greatly diminished, but the colors, lights, and shadows in the Middle Fork, and especially in Le Conte Cañon, were unrivaled. We camped in Grouse Meadow, and the following day moved up the cañon to a little lake near the timber-line several miles above Little Pete Meadow and about three miles below Muir Pass. It was bitter cold that night with a strong down-cañon wind. A heavy frost covered the ground and the water in our bucket was frozen. The ascent to Muir Pass presented no difficulties, and upon reaching Evolution Lake we were monarchs of all we surveyed. At the lake we camped near the northwestern arm on high ground about one hundred yards from the shore, where some huge blocks of talus with a few "tamaracks" and *albicaulis* afforded a little shelter.

On Saturday, August 20th, we were on the summit of Mount Spencer for a well-worth-while view over Evolution Basin. The whole southerly wall of Mount Darwin was exposed to us, and an irresistible desire seized us to attempt the climb and ascertain if the mountain had been or could be climbed, and, while basking in the warm sunlight on the rocks at the summit of Mount Spencer, we searchingly scanned every chimney as a possible means of ascent. The eastern end of the mountain we knew was inaccessible, and we could easily see that to traverse the ridge from the summit of Mount



MOUNT HAECKEL FROM THE SUMMIT OF MOUNT DARWIN
Photo by George J. Young



THE NORTH FACE OF MOUNT DARWIN
Photo by George J. Young

Wallace was out of the question. The failure of several parties the preceding season to reach the summit from the Evolution Lake side led us to believe that perhaps the feasible route would be from the amphitheater on the north, and the desire to explore that region determined our course. The next morning we worked around the western side of Mount Wallace and into the lake basin and amphitheater north of that peak, and ascended to the stream flowing from the big glacier on the north side of Mount Darwin. This amphitheater we found quite interesting and well worth a visit. Through its central axis extends a chain of lakes, separated by almost regular intervals and ranging in color from deep blue in the lower lake to turquoise in the upper one, while the north wall of Mount Wallace, Mount Darwin, and the connecting ridge presents one of the most spectacular sights in the Sierra.

All the way up the amphitheater we carefully examined every chimney and notch in the wall, but with little encouragement. We decided, however, to climb up the talus to the glacier for a closer inspection, and on the ridge about midway between Mount Wallace and Mount Darwin we descried a rather broad notch and one hundred yards to the east a narrower one. These were the only points in the ridge that appeared possible for us to reach. Between the former and the summit there were a number of apparently insurmountable precipices, so we turned our attention more critically toward the eastern notch and observed a large ice-tongue extending from the glacier almost to it. A narrower tongue a hundred feet to the west led to a shelf from which a way to the notch appeared possible. On attempting to cross the glacier, which was practically free of snow and overflowing with water, we found it so dangerous to advance that we retraced our steps and continued up the west side of the glacier nearly to the wall, where there was more snow, less water, and a slighter angle of declivity. After avoiding with some difficulty the *bergschrund,* we crossed to the ice-tongues and found them too steep to climb even if we had had ice-axes. We observed, however, a crack about four inches wide between the tongue and the wall where the ice had shrunken, and, by wedging one foot at a time in this crack, Peter Frandsen and I climbed up it twenty feet or more to the shelf from which we were able, with careful work, to reach the notch. Progress to the peak still seemed doubtful, but we were much elated to see that from where we stood there was a perfectly feasible, though steep, way down the other side of the mountain to Evolution Lake, and we called back to our companions, George J. Young and H. W. Hill, that we would descend that way. After directing our steps some distance along the ridge toward the summit, the difficulties appeared less, so we shouted to Hill and Young to come on. They failed, however, to hear us, and, presuming that we had given up the attempt, they returned to camp after an unsuccessful effort to reach the larger notch.

The thrills we experienced, especially in one place where the ridge narrowed to a knife-edge, are more keenly remembered than easily described. A half-hour of climbing brought us to the summit, elated at our success and inspired by the view, but a trifle disappointed to find that the mountain had already been twice ascended, both times from the Evolution Lake side. The record found in a small baking-powder can contained data regarding an ascent on August 12, 1908, by E. C. Andrews, of the Geological Survey of New South Wales, and Willard D. Johnson, of the United States Geological Survey, and that of Olive J. Schreber, Fred C. Snell, and Allie J. Brown on August 16, 1914. The can containing the record was badly rusted and should be replaced at the first opportunity by a more durable Sierra Club cylinder.

The top of Mount Darwin is a broad, gradually ascending surface, quite similar to the summit of Mount Whitney, with the culminating point a vertical column of rock about fifteen feet high, so regularly fissured as to closely resemble masonry. Mount Darwin is well named, as it is easily the dominating peak of the Evolution group. The view from the summit, while very fine, is not equal to that from North Palisade or Seven Gables. There is no view of Inyo Valley.

Retracing our trail to the notch, we descended the steep chimney filled with loose rocks to the talus, and on through meadowy benches to the lake. The next day Young and Hill ascended the mountain from the Evolution Lake side, following substantially the previous day's route of descent. Hardly had they left camp when storm-clouds began rapidly gathering, and before noon the storm broke upon the Evolution peaks. Knowing the fearless determination of our companions and that they would stop only when the top of the mountain had been reached, Frandsen and I were fearful that some accident might befall them, and we were much relieved when late in the afternoon they appeared, wet, hungry, and tired, but enthusiastic over the day's adventure. They related a unique experience of being caught on the summit in a lively hail-storm, and of seeing three other storms approaching from different directions, and of finding the mountain charged with static electricity. One of them said, "The rocks were buzzing with the static discharge from the clouds and my camera sang a vicious tune as I focused it upon Mount Haeckel."

Our route from Evolution Basin led down Evolution Creek and the South Fork of the San Joaquin to Piute Creek, up the latter, through French Cañon to Piute Pass, and thence to Bishop. Piute Creek afforded some fine cañon scenery, and Glacier Divide as seen from the upper waters of Piute Creek showed a succession of spectacular snow- and ice-fields more alpine-like than anything else we had seen. From our camp well up on Piute Creek we reached Bishop in one day and took up again the burdens of civilization.

COLLAPSE OF MOUNTAIN SUMMITS

By George J. Young

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In August, 1921, I had the good fortune to make a trip through the Whitney, Kern, and Kings river region, entering from Lone Pine and leaving at Bishop. The snow conditions were such that many details of topography which in other years would have escaped attention were noticeable. In descending from Tyndall Pass to the cirque below on the east, several large talus-piles were noted. The rocks in one of these were of large size. There was little doubt that the pile had resulted from the collapse of one of the peaks on the east wall contiguous to the Tyndall Creek Valley. Two other talus-piles were undoubtedly of similar origin. In ascending to Junction Pass, a small talus-pile was observed on the left of the trail, and this also was formed by the sudden letting go of a pinnacle on the eastern scarp.

No other instances were noted until we ascended the Middle Fork of the Kings. Between Cartridge and Palisade creeks the trail passes around a prominent peak on the right-hand side through an immense pile of talus, the individual blocks of which are of very large size. Without much doubt the peak formerly overhung and the overhanging portion let go, falling down a comparatively short distance and breaking into large pieces. There was little opportunity for a "run," and, consequently, the large blocks were not reduced to the condition ordinarily found in talus.

No other instances were noted until we descended from Piute Pass down Bishop Creek. Old Tom Mountain forms one of the prominent peaks on the east scarp, north of Bishop Creek. The top of this peak caved and the débris fell several thousand feet, reaching equilibrium in a small meadow west of a lake and forming a rock-dump at the toe of the mountain slope. This deposit is flat-topped and looks like a mine-dump. The rock pieces were reduced to comparatively small size. Looking up from the meadow to the top of the mountain, the channel carved out by the falling avalanche of rock is distinctly noticeable. At two higher points are dumps which were the results of similar failures of less magnitude; the lower one is covered by a fair growth of mountain mahogany.

Rock avalanches of greater or less magnitude are undoubtedly continually occurring. Talus-piles receive a steady supply from the slow prying off of small blocks under the action of snow, ice, and frost. Pinnacles are worn out until they collapse, but it must be concluded that the failure of a peak is a comparatively rare occurrence. Of the seven instances noted in our trip of some one hundred and eighty miles, there was nothing to indicate that any one of these was of recent occurrence. The conclusion is that all belonged to or occurred in a period considerably before the present. Undoubtedly in each case there was local weakening in the form of a fissure or crack. Such fissures and cracks can be observed in many places. One notable example of a partially open fissure was observed on the south side of Piute Creek Cañon about three miles above the junction of Piute Creek and the South Fork of the San Joaquin. This fissure dipped to the west at a steep angle and extended from the bottom of the creek to the top of the hill. From my position on the north side of the creek, many open crevices were visible. Altogether, it was a remarkable and rare example of a partially open fissure. It was, however, not related to any summit, but was a parting in a mountain mass indicating the result of tension.

While frost and ice very likely cause numerous small avalanches, some force greater than this must be required for the overcoming of the equilibrium of large peaks. Probably earthquakes are in the main responsible. That they are not always so is shown by the collapse of Turtle Mountain at Frank, British Columbia.

The fact that there are a number of collapsed peaks in this part of the Sierra should be of interest to geologists and suggests more detailed examination to discover evidences of the time at which they occurred and whether a number of them belong to a single time period. Simultaneous occurrence would indicate a common cause. Such occurrences may also coincide in time with the formation of the blocky taluses along the walls of the Yosemite Valley.

ACROSS THE SIERRA NEVADA ON SKIS

By H. C. Bradley

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FOR many years I had hoped for the time when I should visit the Sierra in midwinter, planning the route and the equipment as one will even when the realization of the dream seems quite impossible. Unexpectedly the opportunity came last year, and I was able to make the dream come true. An account of the journey on skis and across the range by the Placerville grade to Truckee may be of interest to other Sierra Club members.

The start was made from Berkeley on New Year's day, with clear weather about the bay and favorable reports throughout the northern half of the state. We had just had a day or two of rain, and the storm had passed with northerly winds behind it, so that there was every reason to expect fine weather for some days to come.

I had gone over the equipment with the greatest care, taking only what seemed essential, and yet prepared for any emergency that might arise. As I had to make the trip alone, many little things had to be provided as accident insurance which might have been left out or at least divided in a larger party. For camping in the snow the lightest possible waterproof sheet (6 by 7) was taken as a shelter fly. A sweater, mackinaw coat, mittens, and extra woolen socks were included for cold weather. In addition, the pack included a miniature medicine-kit, camera and films, snow-glasses, automatic pistol, extra rawhide thongs for repairs, ski "dope," thirty feet of light, strong braided cord for tent lashings, and a two-handed axe of Hudson Bay model. The axe was taken in lieu of blankets or sleeping-bag, and thoroughly justified itself. Only the driest obtainable food was taken—sugar, chocolate, dry bean-and-vegetable soup cartridges, dried graham bread, cereal, bacon, butter, milk-powder, coffee and tea tablets. The cooking outfit consisted of an army mess-kit, an army tin cup rigged with a wire bail, and an aluminum bowl fitting the mouth of the cup. Axe included, the pack tipped the scales at forty pounds, and assured food enough for five days at least, with the possibility of making it last another day or so if necessary. For transportation a pair of hickory skis and a stout ski-staff were taken.

No reliable information could be obtained, even by telephoning to Placerville, concerning the places along the road which were occupied, so that it seemed best to go prepared to make the trip entirely in the open and independent of either shelter or supplies of provisions.

All Saturday morning *en route* to Sacramento, the Crystal Range and Pyramid Peak had stood up clear and inspiring above the dark mass of the forested western slopes. Not a cloud appeared, and the outlines were sharp and clean-cut as only a touch of north wind can make them. It was possible to pick out the pass and the route over which the Placerville road works its way to the Tahoe Basin; and the intervening ridges, seen in perspective, looked deceivingly short and easy. It was perfectly evident that the weather was all arranged to make the trip an entire success—at least so it seemed at the time.

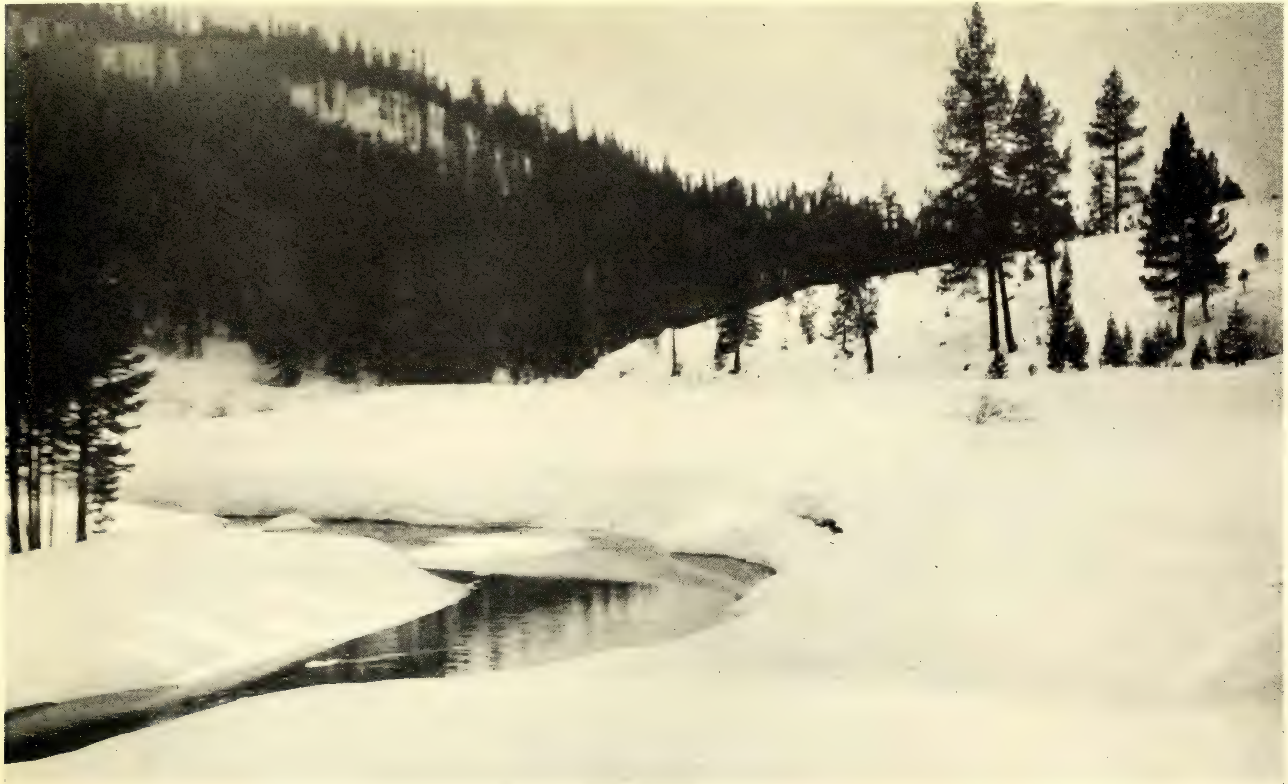
From Sacramento to Placerville the journey was continued in the commodious Pierce-Arrow stage, the terminus being reached at one o'clock. Mr. Richardson, of the stage line, agreed to furnish auto transportation up the road at the rate of fifty cents a mile as far as a machine could go. This seemed somewhat excessive at the time, but, considering the condition of the road as we found it, its mud and snow, holes and bumps, I am inclined to think it was not. At two o'clock we pulled out of Placerville, passed the Pacific House at about four, and reached the bottom of the American River Cañon not far from Kyburz at about half-past four. It was impossible to drive farther on account of the snow, so the auto was abandoned for skis at this point. Twilight was already settling over the deep cañon as I shouldered my pack and started on, and by quarter-past five it was evidently time to make camp. In fact it was past time, for night shut in so rapidly that much of the preparation for camp had to be done hurriedly and in the dark. However, a grove of pine, cedar, and fir on a level bench a few rods above the road made an attractive camp-site, and the fly was set up, a thick bed of fir boughs prepared under it, and at its mouth a crackling fire backlogged and platformed with the green butt-lengths of the small fir trees felled for bed-brush. By six o'clock supper was cooking, while the stars were blinking frostily above the black silhouettes of the forest trees. The wood supply was not of the best, for no really large dry timber could be located before dark, and the dead lower branches of the trees of my grove, while plentiful, were too small to make a lasting fire. However, they were easily obtained and in quantity, and together with a damp and punky standing dead pine, perhaps eight inches at the butt, they lasted till morning. The axe paid for itself that night, where a smaller belt-hatchet would have been worthless.

The night was clear and quiet. The firelight made a lovely picture of trees and snow against the curtain of blackness beyond. The river roared a wild lullaby from the gloom of the cañon below the camp. Inside the reflecting fly, with the fir boughs over the snow, all was dry and warm and fragrant. One could drop asleep luxuriously in the warmth of the crackling fire and an hour or so later wake up chilly when it had sunk to a bed of glowing embers. Another armful of wood purchased another hour of sleep. In this way the night was spent, interrupted more frequently than would have been necessary if the right sort of wood had been obtainable, but comfortable enough in spite of the interruptions.

Sunday morning was dawning as the start up the grade was made. The snow was dry after the frosty night, and in spite of the pack the going was all that could be expected. The road was smooth and billowy, with its surface marked by the broad pads of a mountain lion that had circled the camp at a respectful distance, and who was apparently also heading east across the range. His trail was so fresh that I half-expected to see his tawny form around each turn of the road, but after a mile his tracks turned down into a thicket above the river, and there was no further sign of him.

As the morning advanced the frosty temperature of the night gradually changed to the mild thawing climate of spring. The snow grew softer, though still fairly good to travel on. Clouds began to gather to the eastward above the crest of the range. The views up and down the cañon were exquisite with the sunlight on the snow, the blue shadows, and the green-black masses of the trees. Late in the morning two men on skis appeared coming down the road. They proved to be the caretakers at Phillips' Resort, near the top, bound out for a few days of civilization, and they hospitably offered me the use of their cabin for the night.

By noon I had reached Strawberry and camped on a rocky ledge blown free from snow, where a fire was soon blazing, and snow a-melt for tea and soup. The day had grown so warm, and the work had become so strenuous, that my clothing was wet with perspiration and I was parched with thirst. The best part of lunch was the



NEAR THE HEADWATERS OF THE AMERICAN RIVER IN A SNOW-STORM
Photo by Harold C. Bradley

UPPER TRUCKEE VALLEY AND LUTHER PASS FROM ABOVE MEYER'S
Photo by Harold C. Bradley

brimming bowl of fragrant tea. What a delight it was to bask in the warm sunshine on my island of rock in this world of spotless snow, and all in the middle of winter! Now and then a young fir or pine, bent down and buried under the load of snow and looking like a mound or boulder, would free itself of its load and spring upright without a moment's warning. The first few times this occurred it startled me, like the sudden springing into view of game.

After a pleasant hour's nooning I buckled on my skis again and shouldered the pack for the climb to the top. The snow had grown rapidly softer and more heavy. Every step was now sheer work for every foot gained. There was none of the extra slide at the end of the stride which under favorable conditions makes the ski such a splendid device in the snow. The skis sank deep, and the snow packed and clung heavily at every stroke.

Strawberry Resort looked picturesque enough, with the thick rounding thatch of snow on the roofs. Here and there it had slid off in avalanches and lay piled up about the houses. The river from the bridge was especially attractive. In places it was almost completely bridged over with snow. Where it was open each boulder supported a tower of snow two or three feet high, contrasting with the black of the steam-bed. The sole living occupant of the resort—a Douglas squirrel—went dashing wildly from tree to tree as I crawled slowly by. Altogether, I found Strawberry in winter much more beautiful than in summer—with no dust, no automobiles, no smell of gasoline. The soft hand of nature had wiped away all the ugly symbols of our civilization, and all was in perfect harmony again, as it might have been a thousand years ago.

But the long climb was ahead of me and I pushed on. The great cliff of Lover's Leap rose grandly to the right, but the higher ridges across the valley to the left were lost in cloud, so that I had no glimpse of Pyramid or his neighbors as I toiled up the steep grade to the top of the moraine. Under the conditions, two miles an hour was more than the best I could do. However, with the prospect of a cabin ahead for shelter, I was not at all disturbed either by my slow pace through the heavy snow or by the gathering gloom of the clouds, which were growing rapidly more ominous. From the top of the moraine on up to Phillips' the grade was delightfully easy and the landscapes increasingly beautiful. The yellow pines had given place largely to lodgepole pines and shapely firs, and no tree grows so charmingly in snow as does the fir. The decorations of the previous storm had all melted and dropped off and the branches stood out level and green, or massed in black against the pure white of the snow. The stream ran sometimes in the open, sometimes completely buried in the rounding drifts that had choked its valley and roofed it over. About four o'clock a sleety rain began, and an hour later I reached the cabin, glad of its stove and wood, its roof and bunks. There is no question about the work involved in skiing up-hill, through deep wet snow and under a pack. It was bedtime the instant supper was over, and the next instant the dawn was graying the east window.

It was still raining hard when I struck out Monday morning. I had seen it snow up here in summer; I hardly considered rain in winter a possibility; and I had to admit failure as a weather forecaster. But it was only a few miles to the summit of the pass, then a glorious down-hill stretch to Meyer's, and the Grove Hotel on the shores of Tahoe only eight miles beyond that for the night's stop, a total of but sixteen miles. Still the day before had given me more respect for sixteen miles than I had ever entertained before.

In spite of the rain and wet snow, the trip from Phillips' to the top was a lovely one. The snow was about six feet deep on the level, and the woods were silent except for the song of the storm-gusts that now and then crashed through the tree-tops. The sense of peace and calm repose was more tangible and definite here than anywhere else on the trip. I wished for the chance to spend a month or two with the snug cabin as a base from which to explore this new wilderness of white.

Finally the pass was reached, and the clouds blowing through the mountain rifts in long banners were tearing and whipping themselves to shreds in the great space to eastward. Every few moments the curtain would rise and disclose the valley below, with the Upper Truckee making a black meander pattern on the white valley-floor. Then the cloud streamer would shift and the big moraine south of Fallen Leaf Lake would dimly outline itself and fade into gray again. Once a lift of the clouds disclosed the bulk of Job and his fellows and the whole southern Tahoe Basin. I slipped off pack and skis and sat a few moments in the little snowed-up rest-house that stands in the pass. As I sat in its shelter out of the wind, the deep jarring crash and roar of a small avalanche off to the right and out of sight filled the Upper Truckee Valley with its thunder and its echoes. A few rods to the left across the road was the scar of another that had slid some days before. Evidently there were places where the heavy snow cornice blown through the pass was getting unsteady, and it seemed desirable to get by this first part of the descent as rapidly as possible before any more of it broke away from its moorings.

The descent was not up to expectations. Instead of a thrilling slide down the grade with moments of excitement in rounding the hairpin turns, as I had pictured it, it was just plain hard work. As a matter of fact I did not quite dare start straight down the scarp, ignoring the road and dodging trees and buried boulders. Particularly with the uncertain motions of the pack to disconcert every quick attempt at balance, I did not care to hazard the descent that way alone. It probably would not have worked had I tried it. The heavy snow canceled completely the advantage of the downward pitch, so that every step had to be made with effort. Slushy snow continued to fall, making clothing soggy and the pack heavier.

At Meyer's I found a room open, supplied with wood and a stove, left in true hospitable mountain style for the wayfarer to use. While tea was brewing and clothes drying I put a fresh coat of "dope" on the skis. In wet snow the "dope" becomes worth its weight in almost any commodity.

During the noon rest the rain abated and the storm blew by. The sun was shining fitfully as the start for the lake was made, and in an hour or two the sky was clear except for the cloud-banners streaming from the higher summits. The warmth of the sun, cheerful as it was after the rain, made the going still heavier, and two miles an hour was the best speed I could make, even along this level eight-mile stretch. The Grove Hotel was reached late in the afternoon, and Mrs. Copeland made the stay a very comfortable one, with splendid food after the limited menu of the pack-sack. It was Monday evening, and on the next day the steamer was expected to make its circuit of the lake, stopping at Tallac. Under the conditions, two days would be required to skirt the lake on skis along the western shore to Tahoe City, and, as my time was limited, it was decided to shorten this portion of the trip by taking the boat.

Tuesday morning broke perfectly clear and cold enough to make the snow better for skiing than on any of the preceding days. After breakfast I skied up toward Fallen Leaf Lake and had some splendid slides on the moraines. The views of the snow-covered mountains, Tallac and its neighbors, were glorious. The Job group, and the ranges across the lake too, were resplendent in their winter costume. Never in summer had the lake seemed quite so wonderful in its shades of blue as it did this sparkling winter morning—ultramarine, sapphire, and emerald set in frosted silver.

The steamer arrived at eleven and the trip to Tahoe City was made by half-past two. Every mile opened up new and enchanting vistas of snow and forest and peaks. Tahoe City was like a deserted village buried in snow. One or two houses were occupied, however, and accommodation for the night was secured at the home of Mr. Schmidt, the genial boarding-house-keeper of the place in winter. Leaving my pack and camera, I traveled down the Truckee Cañon a mile or two and climbed the ridge to the east of the river. The snow was deep and in fine condition for skis, and the views through the forest out over the lake in the late afternoon were superb. As the sun set, the eastern crest, Mount Rose, and the Job group were all tinted in brilliant tones of shell-pink, while the lake and lower forest were deep blue against the pale blue and lavender of the shaded snow. Lighted by a few flaming cloud-banners, I had an exhilarating slide down the ridge, through the forest to the lake shore, and to the delicious supper which Mrs. Schmidt had prepared. During supper the wind came up fresh from the southwest and blew a half-gale all night.

Wednesday morning broke with a sunrise as brilliant as the sunset of the night before. Long cloud-banners were blowing through the passes from the west, giving warning of an impending storm. The snow was excellent, however, and the way down the Truckee Cañon comfortably level. In the valley bottom there was little wind, but above on the ridges the trees were bending and thrashing in it. By nine o'clock fine snow was falling and soon the distant view was blotted out by the storm. The temperature rose and the soft fresh snow grew sticky and clinging. Nevertheless, the sixteen miles to Truckee were quite the easiest of the trip, and were covered in six hours of easy going. Before the town was reached about ten inches of fresh snow had fallen, and the whole world, trees and all, were covered with a spotless mantle.

If one can wait for his weather, under shelter while it is unfavorable, winter-camping with pack and skis offers many delightful contrasts to summer trips. Even on the old and beaten routes such as this one, there are no disturbing sights or sounds, no crowds of people, no dust or dirt or draggled evidence of former campers. The solitude is unbroken and refreshing, the prospect on every hand lovely and free from the disfiguring taint of careless occupancy. It is easy to fancy yourself the first white man to thread this wilderness, and as you see the untracked snow on every side you realize that in very truth you are. It is entirely probable that small cabins along the route can be secured by arrangement with the owners, stocked with provisions in the fall, ready as a base for winter use. Some of the cabins at Fallen Leaf Lodge are used in this way by Mr. Price and his friends. Some at Phillips' are suitable for such use. Other resorts would undoubtedly be glad to have the use of their plants extended beyond the short summer season, and would make favorable terms to Sierra Club members.

What more delightful vacation could be planned than one in the heart of the midwinter Sierra! With books to read, the wet days could be pleasantly passed. The smashing winter storms would be only fun with a snug warm cabin to retire into. In the periods of calm, bright weather there would be peaks to climb, excursions to make, lakes to visit—all familiar in a way, but all vastly different from their summer selves.

It will not be long, I think, before the Sierra Club will route its winter trips, from cabin to cabin through the snows, as it now does its summer excursions, making possible, for a few enthusiasts at least, that return to the untouched primitive world which in summer grows each year more difficult to find.

SIERRA CLUB

Founded 1892

402 Mills Building, San Francisco, California
Annual Dues: $3.00 (first year, $5.00)

THE PURPOSES OF THE CLUB ARE:

To explore, enjoy, and render accessible the mountain regions of the Pacific Coast; to publish authentic information concerning them; to enlist the support and co-operation of the people and the Government in preserving the forests and other natural features of the Sierra Nevada.

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John Muir, President 1892 to 1914

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SIERRA CLUB BULLETIN

Published annually for the members

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Walter Mulford . . . . *Forestry Notes*

Albert H. Allen, Francis P. Farquhar, J. N. Le Conte,
Walter L. Huber, William T. Goldsborough, Elliott McAllister,
Elizabeth M. Badè, Phil S. Bernays, C. Nelson Hackett

EDITORIALS

Viscount James Bryce The recent death of James Bryce removes from the official family of the Sierra Club one of its most distinguished members. He has been an honorary vice-president of the club since 1912, and during the decade of his service he followed and supported the club's public activities with keen interest. The last letter, received by the writer only a few months ago, expressed concern for the endangered redwoods of Humboldt County and asked what he could do to assist in the work of conservation. In a man who belonged to numerous other organizations and who lived the extremely busy life of a much-sought scholar, diplomat, and statesman, Viscount Bryce's devotion to the aims and ideals of the Sierra Club will always be a treasured tradition. On his return from Australia, in 1912, Viscount Bryce was the honored guest of the Sierra Club directors at a dinner presided over by John Muir. The invitation was cabled to him in Honolulu, and though he had but one evening to spend in San Francisco it was immediately accepted. All who were present at this memorable dinner listened with delight to the Muir-Bryce exchange of mountaineering experiences and to the estimate of supreme value which both placed upon the preservation of fine scenery in national parks. "The world seems likely to last a long, long time," said Bryce, "and we ought to make provision for the future. . . . The taste for natural scenery is increasing, but the places of scenic beauty do not increase. We are charged with duties toward those who come after, and there is no duty which seems clearer or higher than that of handing on to them undiminished facilities for the enjoyment of some of the best gifts that the Creator has seen fit to bestow upon his children."

It is not generally known that Viscount Bryce wrote a book on the botany of the island of Arran in 1859, and that he climbed Mount Ararat in 1876. During his long life of eighty-four years he was a vigorous and persistent walker. During the days of his ambassadorship in Washington he often took his friends on foot-tours through the parks of the city and showed more resistance to fatigue than some men of half his years. Though a Briton by birth and allegiance, he was in feeling and comprehension an American of the Americans. His mastery of four languages in fluent speech was only another indication of his cosmopolitanism. But we of the Sierra Club shall especially remember him as a lover of the great outdoors, and as one who deserved his own tribute to the memory of John Muir—"a singularly pure and simple character, who was in his life all that a worshiper of nature ought to be." W. F. B.

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Roosevelt–Sequoia National Park We had hoped to be able to chronicle, before going to press with this Bulletin, the creation of the Roosevelt-Sequoia National Park. At a hearing held before the Public Lands Committee of the House on January 13th, Representative Barbour announced that in response to the desire of a majority of his constituents he intended to amend his bill so that the provisions of the Jones-Esch Act, relating to existing national parks, shall apply also to this new park. This has been done, and the Barbour Bill (H. R. 7452) is in such form now that it should command the hearty support of all public-spirited organizations. Chief Forester Greeley, at the above-mentioned hearing, defined admirably the characteristics which an area should possess in order to be entitled to be set aside as a national park. First, in its scenic attractions and natural wonders it should be national in importance; second, the value of its recreational service to the public should clearly outweigh the value of its commercial resources, were they to be developed. It was his opinion that the extraordinarily diversified scenery of mountains, rivers, lakes, and forests comprehended within the boundaries of the proposed park is so unique and outstanding that it should be reserved for recreation only, and that all commercialization should be excluded. Thus the Sierra Club finds itself in complete accord with Forester Greeley in point of policy regarding our national parks. Let us all do our utmost to aid Director Stephen T. Mather to impress upon Congress the importance of speedy action upon this bill. The only obstacles at the present time appear to be the water-power application of the city of Los Angeles and some trivial objections of our California Representative Charles F. Curry. W. F. B.

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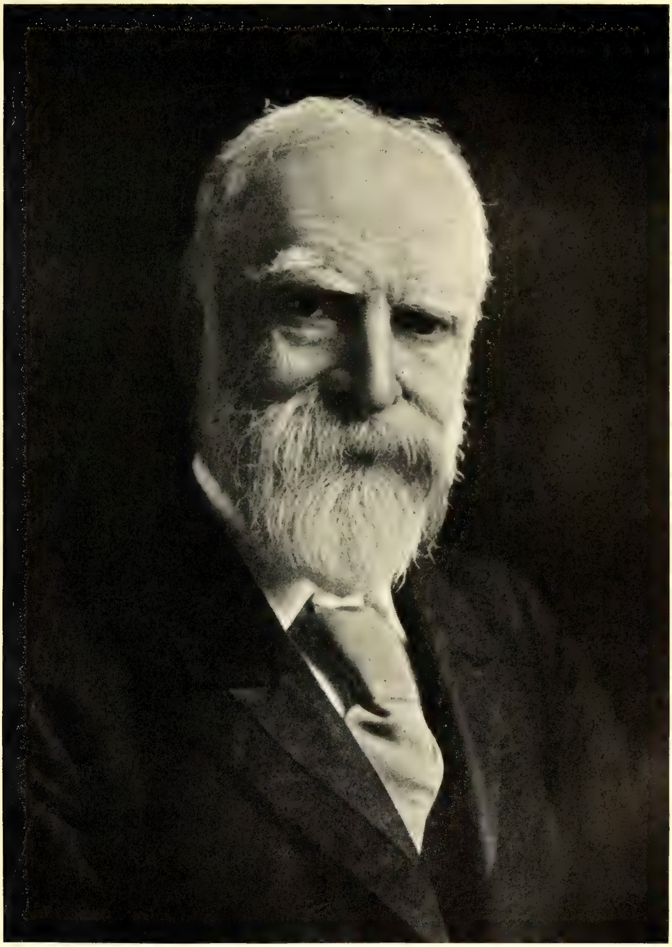
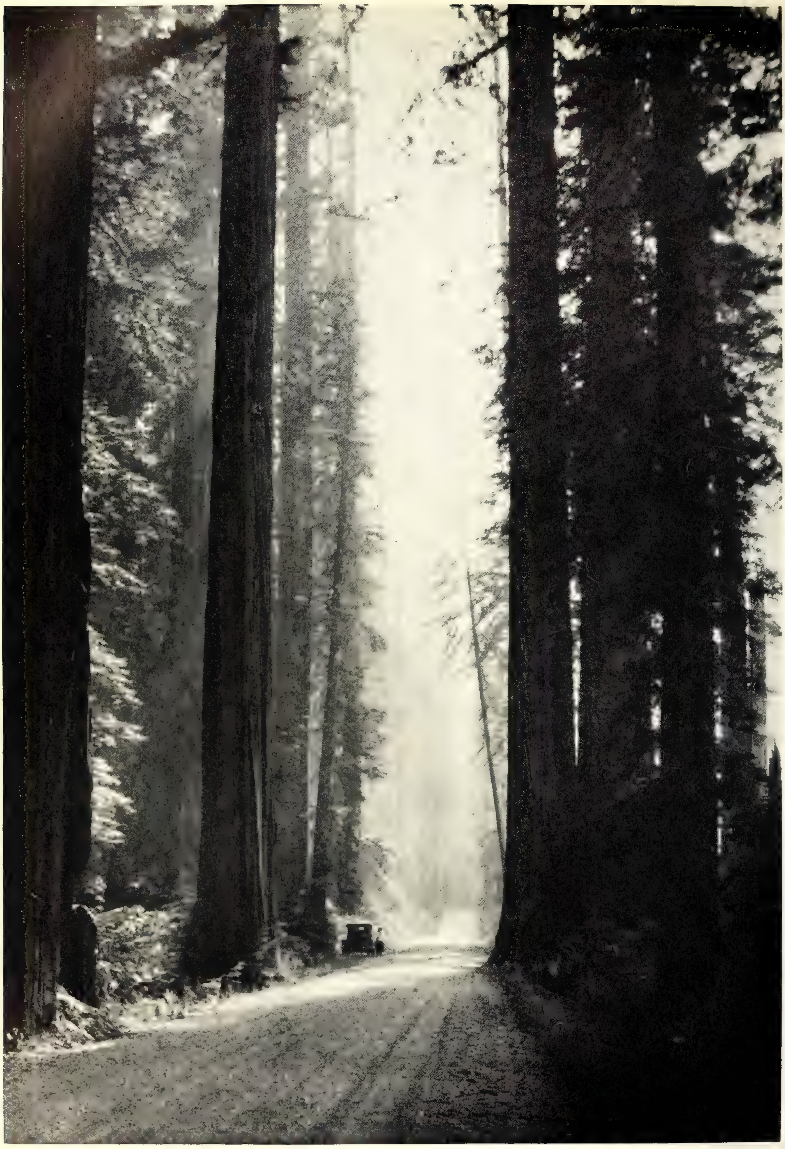
THE REDWOODS LEAGUE The Sierra Club congratulates its California sister, the Save-the-Redwoods League. Two years ago the league laid down a definite program for its first work. The program has been followed, the results achieved. The league is now ready to move forward to the greater task ahead. The results, and the task, are summarized elsewhere in this issue.

"California sister"—yes, but Californian only in the location of the object of its endeavors. In spirit, support, and leadership the league is national. Its strivings are for the people of America. Without vigorous support from all America, it cannot reach full measure of success. The State of California, in a year of seriously attempted retrenchment, announced by its appropriation of $300,000 that here is an undertaking that must not wait for "prosperity." Humboldt County made an appropriation early in the movement. Several individuals have generously done more than their bit. But all this means only the setting of the first few guide-posts on a far trail. There is hard work to be done all along that trail. The saving of a few scattered groves is not the goal. The settlement of Plymouth and Jamestown did not make a nation. Workers are needed, not in California alone, but throughout the Union.

And is it worth while to work so hard to preserve something of this particular bit of "an America worth fighting for"? Madison Grant answers, in his address at Bolling Memorial Grove on August 6, 1921: "Probably nowhere on earth does there exist a forest to compare in continuous grandeur and unqualified beauty with the redwoods that are found along the Eel River and to the north. We have reason to believe that no finer forest ever did exist on earth during the millions of years since vegetable life first appeared. It is, therefore,



VISCOUNT JAMES BRYCE: 1838–1922
(See editorial)



AMONG THE REDWOODS NEAR DYERVILLE, HUMBOLDT COUNTY
Photo by Walter L. Huber

not merely a privilege, but it is a sacred duty for Americans to guard and to preserve what little is left of this heritage our fathers so cheerfully wasted. This is not a matter of sentimentalism. It is not a vague idealism. It is a reality. These trees are part of our national monuments, our national inheritance, of far more value to ourselves and to those who come after us than any of the works of man." W. M.

REPORTS OF COMMITTEES

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TREASURER'S REPORT

To the Directors of the Sierra Club:

The following report on the finances of the Sierra Club for the year ending December 31, 1921, is respectfully submitted.

JOSEPH N. LE CONTE, Treasurer

GENERAL FUND

Received:	
Dues from 353 new members, at $5.00 each	$ 1,765.10
Dues from 1597 old members, at $3.00 each	4,791.30
Total dues received	$ 6,556.40
Advertising in SIERRA CLUB BULLETIN	479.53
Sublease of Room 403, Mills Building	240.00
Int. on Liberty Bonds of Permanent Fund for 1920, transferred	85.00
Part interest on Liberty Bonds of Permanent Fund for 1921	63.75
Interest on savings-bank accounts	74.34
Income accrued on War Savings Stamps	24.00
Sale of song-books and small receipts	97.00
Sale of BULLETINS	69.15
Sale of pins and postage-stamps	31.85
Total received	$ 7,721.02
Expended:	
Office rent	$ 900.00
Salary of Assistant Secretary	1,180.00
Total cost of 1921 BULLETIN, printing and cuts	2,720.71
Distribution of BULLETIN, postage and mailing	168.35
Cost of securing advertisements	108.75
General office expenses, postage and stationery	440.74
Telephone service and telegrams	169.82
Proportion of dues to Southern California Section	898.00
Expenses of Le Conte and Parsons lodges	291.33
Printing of circulars and notices	171.71
Expenses for "Save the Parks" movement	553.22
Printing of song-books	156.90
Local walks expenses	68.45
Traveling expenses of directors to meetings	62.00
Taxes on club room and Soda Springs property	59.98
Additions to the library	48.82
Election expenses	15.15
Purchase of club pins	55.13

Meetings and entertainments	40.25
Dues to other clubs	35.50
Express on BULLETINS and albums	17.04
Extra stenographic service	6.75
Sundry small expenses	13.00
Total expended	$ 8,181.60

Summary:

Total received	$ 7,721.02
Balance January 1, 1921	4,326.58
Total	$12,047.60
Total expended	8,181.60
Balance December 31, 1921	$ 3,866.00

On hand:

First National Bank, cash	$ 158.50
Mercantile Trust Company, Savings Union Branch, cash	786.59
Security Savings Bank, cash	1,987.91
War Savings Stamps	908.00
Cash in office	25.00
Total	$ 3,866.00

PERMANENT FUND

Received:

From new life memberships, at $50 each	$ 200.00
Interest on savings-bank account	23.53
Part interest on Liberty Bonds	21.25
Total received	$ 244.78
Balance January 1, 1921	2,552.90
	$ 2,797.68

Expended:

Liberty Bond interest for 1920, transferred to General Fund	85.00
Balance December 31, 1921	$ 2,712.68

On hand:

Liberty Bonds: Third 4¼%, par value	$ 1,000.00
Liberty Bonds: Fourth 4¼%, par value	1,000.00
Security Savings Bank, cash	712.68
Total	$ 2,712.68

ROBERT S. GILLETTE FUND

On hand:

Victory Bonds: Fifth 4¾%, par value	$ 1,000.00

SPECIAL MEMORIAL LODGE FUND

On hand:

Securities at par value of	$ 2,000.00

MEMORIAL LODGE CURRENT FUND

Received:		
Interest on Robert S. Gillette Fund	$	47.50
Interest on Special Memorial Lodge Fund		93.75
Total received	$	141.25
Balance on hand, January 1, 1921		108.75
	$	250.00
Expended:		
Repairs to Le Conte Lodge		97.58
Balance on hand, December 31, 1921	$	152.42
On hand:		
Wells Fargo Nevada National Bank, cash	$	152.42

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SECRETARY'S REPORT

To the Members of the Sierra Club:

The club can indeed be gratified at the progress made in park matters during the past year. The assaults upon the integrity of the Yellowstone National Park were successfully resisted and Congress refused to sanction the proposed invasions. Governor Stephens signed the bill passed by the state legislature early in 1921, appropriating three hundred thousand dollars for the purchase of redwoods along the State Highway and in the Eel River region in Humboldt County. These purchases are being consummated, and in combination with private gifts of lands and purchases through private donation, will result in the preservation of a strip some twelve miles in length along the highway mentioned of these magnificent redwoods. This is a splendid step forward, but should be followed up by the acquisition and preservation of a large grove of the finest stand of redwoods obtainable. Whether national interest can be sufficiently aroused to bring about congressional action is a problem for the future. The Save-the-Redwoods League is to be congratulated upon its effective work along these lines. The differences between the Forest Service and the National Park Service with reference to the boundaries of the proposed Roosevelt-Sequoia National Park have been adjusted, and the Forest Service is now enthusiastically back of the plan to create this addition to the existing Sequoia Park. The bill has been favorably reported from the Public Lands Committee of the House of Representatives, and is therefore in a favorable position for passage by the House. It will then have to be passed by the Senate. The chances for creating this enlarged park are better than ever before, but we will require the enthusiastic and earnest support of all our members when called upon to aid at critical junctures.

Mr. Francis P. Farquhar represented the Sierra Club at the hearings in Washington and did most effective work in spreading information and coordinating the assistance rendered by many of the leading clubs of the East. His trip in the behalf of the club was well worth while, the club paying a portion of his expenses.

A gift of three hundred dollars has been made to the club in the name of

Mr. Frederick Morley, who lost his life on the outing in 1921. This fund is to be used to advance the club's work.

The club during the coming year will assist in the erection of a stone shelter, or rest-house, at Horse Camp on Mount Shasta. Such a refuge for those who are intending to climb the mountain has been a great need for many years. Mr. Hall McAllister, a member of the club, has generously volunteered to undertake the work of raising the necessary funds and supervising its construction. The club will contribute a portion of the amount needed and the balance has been raised by subscription from various Chambers of Commerce and others interested in its erection. A ten-year lease for a nominal rental has been secured for the site from the Southern Pacific Company, which owns the land on which it is to be erected. Great credit is due Mr. McAllister for his generous labor in this behalf.

The club for the past few years has been urging upon the Yosemite National Park Service the importance of building a main trail across the Tuolumne Cañon so as to facilitate travel from the Yosemite Valley into the northern portion of the park. It is gratifying to be able to report that a splendidly constructed trail has been built from the Tioga Road down into Pate Valley and the Tuolumne River bridged. A connection with the Rodgers Lake trail is promised for 1922. The trail down to the Waterwheel Falls has also been completed.

During the past year 352 new members were added, and 185 members were removed from the list, due to death, resignation, and non-payment of dues, so that the total membership now is 2424.

Respectfully, William E. Colby, Secretary

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REPORT OF 1921 OUTING

For the tenth year the Sierra Club held its annual outing during July and early August of 1921, in the Yosemite National Park. The property controlled by the club in the Tuolumne Meadows at the Soda Springs was used as a base camp. From this base a side-trip, participated in by a large majority of the party, was taken into the northern portion of the park, the club traveling by way of Matterhorn Cañon to Benson Lake. On the return a one-night camp was made at Rodgers Lake. A number of the party took a side-excursion over Burro Pass into the headwaters of Kerrick Cañon. During the latter portion of the outing, another side-trip was taken down to the Mount Ritter and Thousand Island Lake region. On the way, over seventy members of the club ascended Mount Lyell. This proved to be a more difficult climb than usual, because of the melting of the residual glacier, due to the past unusually dry seasons. The snow-tongue, which in ordinary seasons reaches nearly to the summit, had almost disappeared, only a small tongue of ice remaining, and this extended only part way up the rock chimney. A party of twenty-one members climbed Mount Ritter. Here, also, the absence of snow and ice was conspicuous. The club camped at both Thousand Island and Garnet lakes, staying two nights at the latter camp, which was found to be one of the most delightful of the outing.

The sad fatality which resulted from the fall of Mr. Frederick Morley while climbing an unnamed peak to the south of the Tuolumne Meadows was the one outstanding accident which marred the otherwise enjoyable outing. Mention of this is made in another portion of the BULLETIN.

The outing for 1922 is planned for the headwaters of the Kern River, and during the latter portion of the outing the party will, after climbing Mount Whitney, cross by way of the John Muir Trail into the headwaters of the South Fork of the Kings River, and, after passing through the main Kings River Cañon, will return to the starting-point on the Middle Fork of the Kaweah River by way of the wonderful Giant Forest. A complete description of the trip as planned is contained in the outing announcement recently issued.

Judging from the applications already made and the early date at which outing deposits are being paid, this outing should prove one of the most popular that the club has undertaken.

OUTING COMMITTEE,
Per WILLIAM E. COLBY, Chairman

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LE CONTE MEMORIAL LODGE—SEASON 1921

The Le Conte Memorial Lodge opened to the public on Monday, May 16, 1921, and closed on Saturday, August 20th. A remarkably heavy season was experienced; the number of visitors to the lodge reached well above five thousand, this figure not including those who failed to register. The proportion of eastern visitors to the Yosemite seemed greater this year than last, and many tourists from the world over entered the memorial during the summer. All seemed to enjoy and appreciate the library and photographs, and many inquiries were received regarding the club and its work.

Previous to the opening date the directorate of the club authorized certain repairs and alterations to be made on the building that I had suggested in last year's report. The principal items of this work are as follows: 1. New doors for side rooms: Constructed in conformity with the general style of the structure, these doors greatly add to the appearance of the interior. 2. Shelves in side room: A useful addition, facilitating storage of various small articles of the lodge, and, whenever the club's annual outing party passes through Yosemite, the members' suitcases can be conveniently stored and handled. 3. Repairs to eaves: Complete stopping of all cracks and crevices in the eaves has happily prevented the entrance of small animals, especially wood-rats, to the interior. 4. Repairs to table, insertion of sill for front door, construction of shelves near desk, and chain guard at steps leading to fireplace pit complete the list of improvements.

A telephone was installed and proved very handy throughout the summer, especially when the club was encamped at Soda Springs. Several baskets and Japanese tubs for decorative purposes were donated by Mr. M. Hall McAllister.

Several valuable additions to the library were received during the season, mostly as donations, while a few books were purchased by the club. The new books are "The Glaciers of the Alps" (Tyndall), "The Gigantic Land Tortoises of the Galapagos Archipelago" (John Van Denburg), "A Distributional List of the Birds of California" (Joseph Grinnell), "Abraham Lincoln" (John

Drinkwater)—these presented by Mr. F. C. Holman; "The Life History of the *Recurvaria Milleri,* the Lodgepole Pine Needle Miner, in the Yosemite National Park" (J. E. Patterson)—presented by the author; "Yosemite and Its High Sierra" (John H. Williams)—presented by the author; and several volumes of Darwin's works—presented by Mrs. W. L. Adams. The books purchased are "Steep Trails" (John Muir), "My First Summer in the Sierra" (John Muir), "Our National Parks" (John Muir), and "Discovery of the Yosemite" (Bunnell).

Six books used by the Nature Guide Service were installed in the lodge during the summer. An album of colored wild-flower photographs was loaned to the lodge by Mr. C. H. Adams, and a collection of polished woods was loaned by Miss Mary Bray. A very interesting photograph of the Sierra from Mount Hamilton was presented by Dr. R. G. Aitken, of the Lick Observatory. The most noteworthy addition to the lodge was the excellent revolving photograph-frame, formerly in the club's office in San Francisco. It attracted a great amount of attention.

The Le Conte Memorial Lectures (under the auspices of the University of California) were held in Yosemite this year as usual, being given chiefly at the log auditorium near the Le Conte Lodge; the first series, however, was delivered at the Government Pavilion in Yosemite Village. They were well attended and altogether successful.

The Yosemite elk paddock (under the auspices of the Academy of Sciences) now contains ten valley elk—five cows and five bulls. This paddock is a great attraction to the tourists, as the interesting animals may be observed under excellent conditions.

The Academy of Sciences is proposing to increase the Zoological Park in Yosemite by the erection of a beaver basin containing a small family of these animals, and also a large cage to be used as an avairy for wild pigeons, grouse, and other birds found in the Sierra. This work will not be carried out, however, until the National Park Service grants permission.

Respectfully submitted, ANSEL E. ADAMS,
Custodian 1921

·IN·MEMORIAM·

·JOHN·ARTHUR·ELSTON·

1874–1921

In noting the death of our much loved fellow member of the Sierra Club, John Arthur Elston, we voice the sorrow of each one who knew him. His kindly sense of humor and sympathetic interest in his fellows made his companionship a boon above price. As member of Congress for the past six years, he has, in addition to personal relations, given valuable public service in furthering the purposes of this club by working whole-heartedly for the conservation and enlargement of national parks. As companion, friend, and tireless worker in our cause, our loss is not to be measured in mere words.

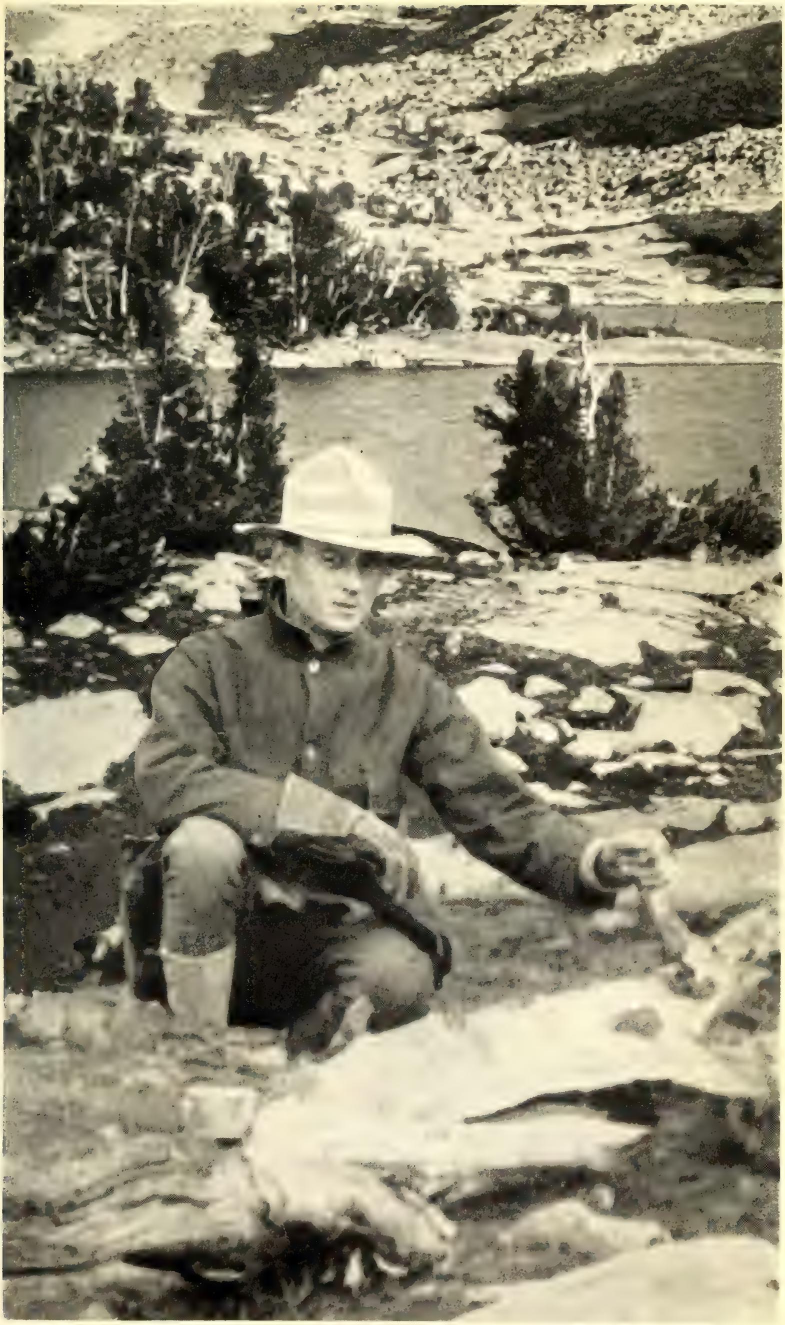
·FREDERICK·HITCHCOCK·MORLEY·

1877–1921

The untimely death of Frederick Morley while on the Sierra Club outing last summer was one of those sad occurrences that we cannot reconcile with what we feel should be the lot of such a noble and courageous spirit. He was attempting to ascend an unnamed peak situated between the Cockscomb and the Echo Peaks near the Tuolumne Meadows. In some unknown way he slipped and fell many feet, fracturing his skull. His two brave companions by superhuman effort lowered him some five hundred feet to a place where he could be left while one of them returned to camp for assistance. He was brought into camp and received every care and attention that nursing and skilled medical aid could render, but he passed away after lingering for a few days. Fortunately his wife could be reached and was by his side to the end.

We need more men like Mr. Morley in this world. He graduated from Yale and took a degree of Mining Engineer from Columbia. With exceptional ability he practiced his profession and in a very few years was able to retire. On the advice of his physician he lived an outdoor life and came with his wife to California, where near Santa Barbara they established what he called "a small kid colony, or fresh-air farm," taking care of needy city "kiddies" requiring country life. During the war he was commissioned Captain in the Engineers Corps. After leaving the army he and his wife came to San Francisco to live. Here he found time to pursue his great hobby—pictorial photography, expressed in gum prints and bromoils, many of which have been exhibited abroad and have achieved an international reputation. Many of his bromoils have the qualities of etchings or fine pencil drawings. He devoted most of his time, however, to Boy Scout work, which he carried on with deep sympathy and understanding for boy nature. His death has left a void in the heart of many a Boy Scout.

He died as he lived, rejoicing in the fine things of life, and a brave and unselfish spirit is now at home in the mountains he loved so well.



FREDERICK HITCHCOCK MORLEY

ON THE EDGE OF THE HUMBOLDT COUNTY REDWOODS
Photo by Howard C. Tibbitts

NOTES AND CORRESPONDENCE

Mountain Climbing Notes

I. ANOTHER ASCENT OF THE BLACK KAWEAH (13,752 FEET)

By Philip E. Smith

A leisurely climb from our camp in the Big Arroyo brought us to the cirque at the base of the western face of the Black Kaweah; we were now confronted by the real work of the day. Although anxious to climb this rugged peak, we had but little hope of successfully completing the ascent, and thus had only sauntered along, admired the flowers which were at the height of their season, watched a magnificent buck which we startled at his breakfast, and stopped often to drink in the cool invigorating air, or to admire the beautiful panorama that was opening up all about us.

We failed to find the lake which the map shows at the headwaters of the stream running from the Black Kaweah, and it seems to have been converted into a beautiful mountain meadow. The cirque, one of almost perfect horseshoe shape, harbors in its lower end one of those clear azure lakes so well known and loved by the wanderers in the mountains. At the lower end of this lake we stopped to survey carefully the mountain, the climb of which we had set as our task and pleasure. Of the snow wish-bone mentioned by Mr. Hutchinson in his interesting account of the first ascent of the Black Kaweah in the last Sierra Club Bulletin, we saw but an uncertain vestige. Farther up on the mountain we could plainly discern two large chimneys—or, perhaps better, draws—running in the direction of the summit. It seemed to us that the one to the left must have been the one through which Messrs. McDuffie, Hutchinson, and Brown reached the top. However, any feasible direct approach to this draw appeared to be cut off by a particularly steep glacial cliff and bench.

After spending considerable time trying various chimneys and cracks in an attempt to get over the obtruding bench and directly into this draw and failing each time, it was more by hit than good wit that we finally attempted the base of the large draw farthest to the right. This proved upon trial to be surprisingly easy to ascend. After climbing but a few hundred feet an obliging way opened to our left and led right into the draw up which we desired to make the ascent. Between the two draws only one place at all difficult was encountered, and that was only so for the two shorter members of the party. An outstanding rock slanted the wrong way, and the handholds above were very poor. A more intimate knowledge of the recent dances might have been of service in wriggling over and around it.

Once attaining this draw, no serious obstacle interrupted our progress as we worked our way toward the top, expecting at any time to find some place more difficult than any we had yet encountered. It was stiff work, but at no time did we use ropes, nor did we feel that we were taking any grave risks.

We monumented our way as we proceeded, expecting to leave the monuments if we succeeded or to remove them if we failed. After a little over three hours' climb from the cirque we reached the summit at 1:15 P.M. There a most magnificent view was unfolded. Far to the northward we could plainly discern Ritter, Banner, and Lyell, peaks we had previously climbed. Nearer stood Humphreys, the Evolution group, Goddard, and the Palisades in all their rugged glory.

We raised the monument another foot, thus, according to the map, making the Black Kaweah two feet higher than its imposing mate to the east. Yet it still must lack many feet from being as high, for the Gray Kaweah, which is recorded as some sixty-two feet higher than the Red Kaweah, could not be seen from our point of vantage because of the interposition of the latter peak.

We repaired the small flagstaff, which had been broken by the winter gales, and replaced the tattered handkerchief. The tobacco-box, which bore eloquent testimony to the excellent brand of tobacco used by the donor, rested in the monument and was in perfect condition. To the three signatures reposing therein we added our three, namely, Philip E. Smith, Miriam E. Simpson, and Irene P. Smith, the date, July 26, 1921, and a brief description of the ascent.

After spending an hour on the summit we started to descend, reaching the cirque in two hours, and our camp, which was at the point where the Black Rock Pass Trail crosses the main stream in the Big Arroyo, at about six o'clock.

It would seem that the Black Kaweah can be added to the list of readily climbable Sierra peaks. There is no real danger in the climb other than that attendant upon all climbing of mountains where the rocks are insecure and easily dislodged. The Black Kaweah, we agree with Mr. Hutchinson, is the prize in this respect.

II. TEMPLE CRAG (13,016 FEET)

By Julian H. Steward

The ascent of Temple Crag was made by W. B. Putnam and Julian H. Steward on June 24, 1921, from the first Big Pine Lake. This mountain is shown on the Bishop quadrangle of the U. S. Geological Survey as Mount Alice, but it is understood that the name has been officially changed to Temple Crag. We reached the peak by skirting to the south of the second lake, above which it towers, thence climbing to a saddle below its eastern face. The cliffs here offered little hope; so we continued around the rather precipitous southern slope until a favorable chimney was found running to the northeast. This chimney terminated about half-way up, and from there the route lay in a northwesterly direction up the comparatively regular face of the mountain. This brought us to a knife-edge which forms part of the top. The actual summit is reached, however, only by crossing the head of a chimney which rises from the south. We climbed the last few feet of the vertical wall and then followed the ridge westward for a short distance. There was no indication of the summit having been visited before. The view of the Palisade group is incomparably fine.

The descent was made by following down the eastern slope to a point where it breaks off abruptly in cliffs above the saddle. We descended to the southeast by a crack which comes out at the base of the mountain just south of and below the saddle. Thence we followed our former route back to camp. The total time *en route* was about five hours.

III. MOUNT HUMPHREYS (13,972 FEET)

Another ascent of Mount Humphreys was made on June 27, 1921, by Julian H. Steward and W. B. Putnam, climbing from the western side of the mountain. The route was up a chimney just south of the main peak, running to the northeast. This was no doubt that followed by the party that made the first ascent in 1904. With the exception of ice in the chimney, no great difficulties were encountered. The round trip took about five hours.

IV. MOUNT RITTER (13,156 FEET)

Henry G. Hayes, W. B. Putnam, and Julian H. Steward climbed Mount Ritter on July 4, 1921, from Thousand Island Lake. Circling to the north of Banner Peak, they climbed the glacier between Ritter and Banner to the cliffs that form the eastern face of Ritter. Thence to the summit the cliffs were precipitous and the climb required great caution. The descent was made by a short chimney on the western face south of the summit. Camp was reached after a hard day of ten hours.

V. NORTH PALISADE (14,254 FEET)

A party from the California Alpine Club climbed the North Palisade in July, 1921. One of the party, Herman Ulrich, climbed directly up the main chimney to the deep notch in the crest and scaled the ridge to the summit. This was on July 24th. He reports the route to be exceedingly dangerous. Seven others climbed the peak on the following day by the customary route. They were: E. L. Macaulay, James Wright, Ernest Pierre, Al Pinther, Marcus Davis, J. E. Webb, and Arthur Flint.

VI. KETTLE DOME (9,452 FEET)

Kettle Dome, on the ridge north of Tehipite Dome, was climbed for the first time on July 20, 1921, by Herman Ulrich. Only one or two narrow cracks in the smooth rounded granite afford finger-holds sufficient to make an ascent possible.

VII. MILESTONE (13,643 FEET)

The Milestone was climbed again on August 17, 1921, for the first time since 1916. Benjamin Webb Wheeler, Ansel F. Hall, and Francis P. Farquhar went over Colby Pass on foot from camp at the lake on the Roaring River side and followed the route of the first ascent through Milestone Bowl. A new route was found for the descent over a series of ledges on the western side to the head of a large lake that can be seen from the summit. From this lake the way is easy to the lake at the foot of Colby Pass. The party reached camp at Scaffold Meadow on Roaring River that night. The mountain can undoubtedly be climbed from the western side.

The first ascent of Milestone was made in 1912 by William E. Colby, Robert M. Price, and Francis P. Farquhar. (See SIERRA CLUB BULLETIN, vol. IX, No. 1.) Several other parties followed that year, and a number from the Sierra Club outing of 1916 made the ascent under leadership of Albert H. Allen. One of the 1912 parties climbed on the northeastern side from the head of Milestone Creek.

VIII. SPLIT MOUNTAIN (14,051 FEET)

Ansel F. Hall climbed Split Mountain, sometimes known as the South Palisade, on August 28, 1921. He found no records of ascents between 1910 and 1921, when the mountain was also ascended by H. M. Ellis, L. T. Thornsen, and S. M. Fitton on July 31st, and by Clifton Hildebrand on August 5th.

The first ascent of Split Mountain was made by J. N. Le Conte, Helen M. Le Conte, and Curtis M. Lindley on July 23, 1902. They were followed in 1904, and again in 1905 and 1907, by parties of the United States Geological Survey, who occupied this summit as a triangulation station. On July 31, 1910, J. N. Le Conte revisited the peak with R. M. Price and R. G. Marx. These are all the ascents recorded.

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THROUGH ROARING RIVER GORGE

By J. B. AGNEW

The public demand of the day is highways, roads, and trails, and there is great need of a trail up Roaring River to open up Sugar-Loaf Valley, the Giant Forest, the Kern-Kaweah, etc.

There were four trails entering Kings River Cañon from the south and as many leaving it to the north and east. The old Shipe Trail, long abandoned, dropped into the cañon some four miles below Cedar Grove. This trail was named for an old miner who came to town periodically with bags of gold-dust. On Christmas Eve, 1872, Shipe was shot by McCrury, who was promptly hanged by a vigilance committee, and people are still looking for the lost Shipe mine.

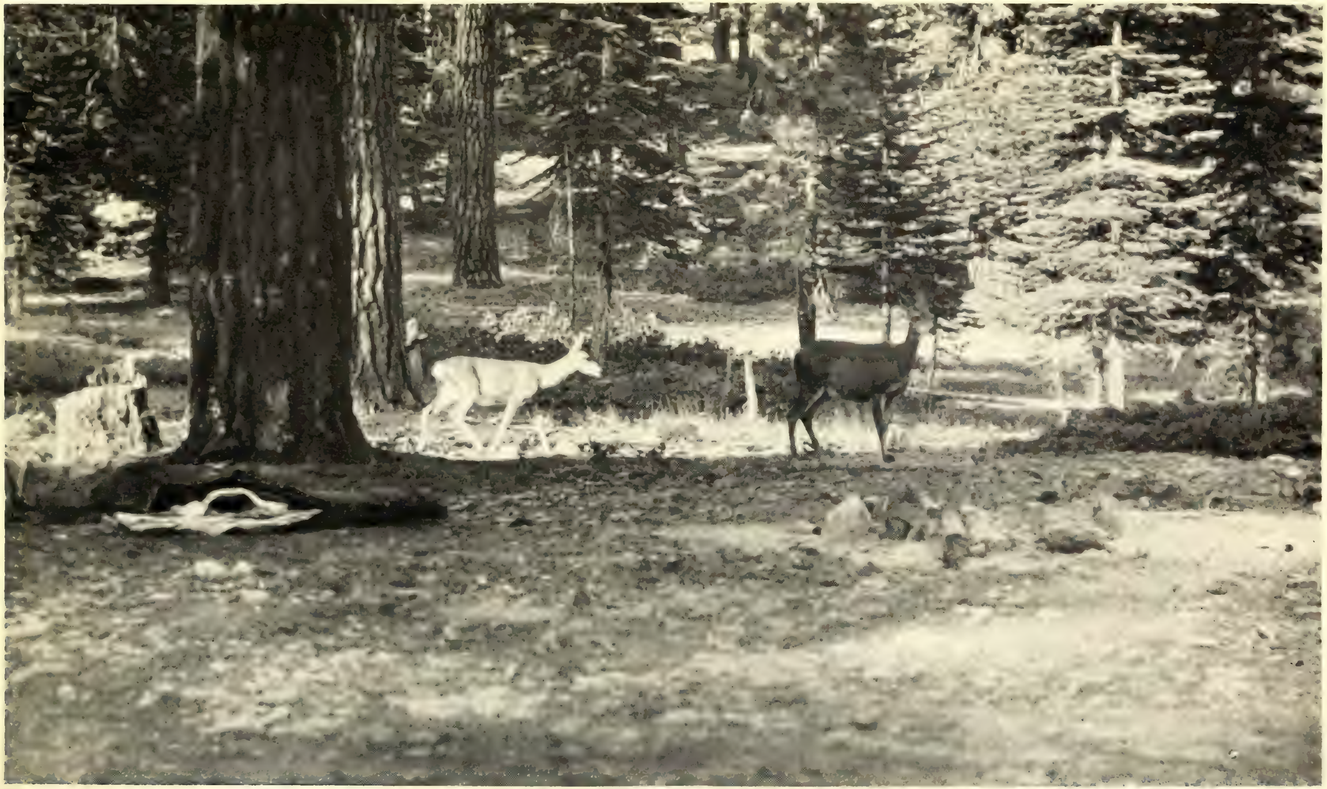
The lower trail, made by Poly Kanawyer and Jim Clay for early spring travel, enters the cañon about two miles below Cedar Grove, but is never much used.

The main trail, built by Sam L. N. Ellis down the long hill from Summit Meadow, has taken most of the travel for the past twenty-five years. Anyone going into the cañon will never forget this drop of three to four thousand feet in three to four miles.

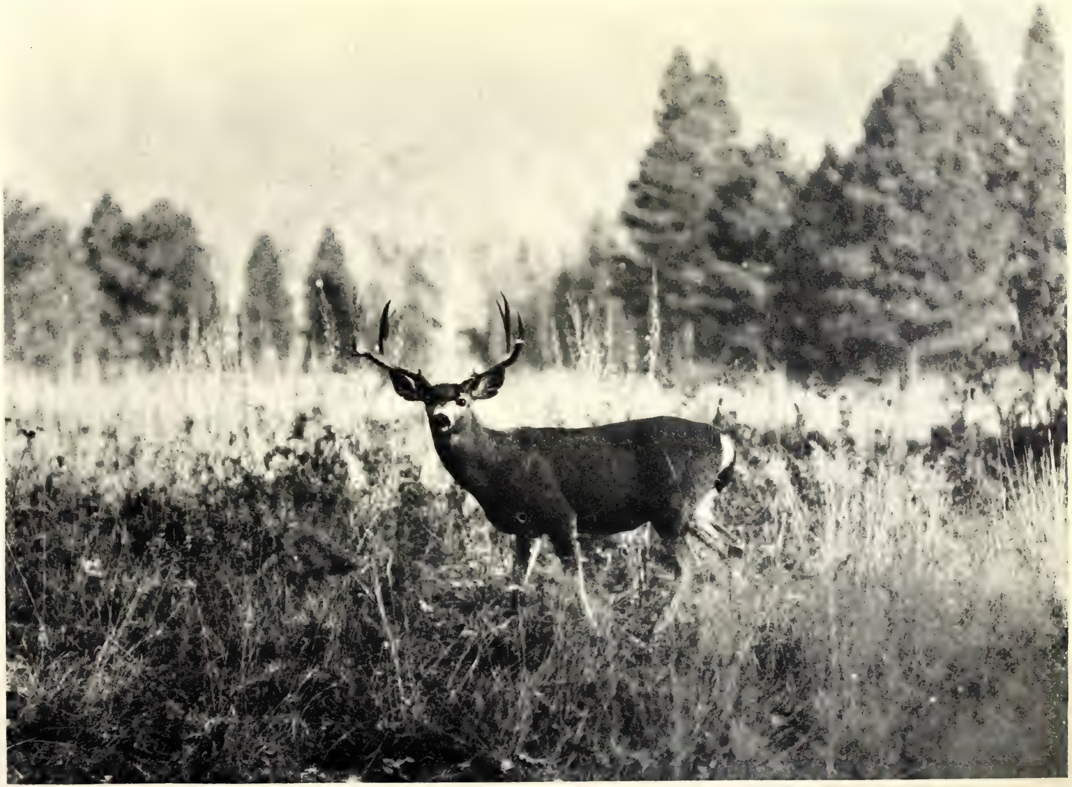
The fourth trail, known as the Old Independence Trail when I first traveled it thirty-seven years ago, was used by the Piutes of Owens Valley for trading or fighting with the Diggers of the San Joaquin Valley long before the white man's day. This trail comes down the east side of Fox Creek, reaching the cañon a short distance east of Cedar Grove.

During September, this year, in company with a hunting party of eight, we picked up a few broken fragments of this old abandoned trail and followed it up to where it crosses the east branch of Fox Creek; here we took up the steep mountain to the east and camped for several days at a little meadow on the north side of Sentinel Ridge. We prospected the south wall of Kings River Cañon and the country along the west of Roaring River to see if it would be possible to build a trail down through Roaring River Gorge.

I was not fully satisfied with just looking down this wonderful gorge, so a little later I took three of our party and six horses from our central camp at Horse Corral, rode up to Mount Mitchell (10,375 ft.), thence along the top of



ROCKY MOUNTAIN MULE-DEER (*Odocoileus hemionus hemionus*)
Photo by Ansel E. Adams



ROCKY MOUNTAIN MULE-DEER (*Odocoileus hemionus hemionus*)
A friendly buck in Yosemite Valley
Photo by Pillsbury's Pictures, Inc.

Sentinel Ridge down to where it breaks into Roaring River, over about as rough mountain country as ever a person took animals without a trail.

We camped on a little stream which we named Otter Creek on account of the otter colony and the many otter-slides we found here. There was no evidence of man ever having visited this locality.

From this camp we were able to prospect Roaring River Gorge to our satisfaction. J. N. Young, ex-supervisor of Tulare County, to whom Sequoia National Park is indebted for the fine highway to the westerly boundary of the park, and I took a gun, some fishing-tackle, a long pack-rope, and good tennis shoes, and proceeded to go through the gorge. We were successful, but could not have made it had the water been high. The trout in the gorge were not fly-wise, so we filled our creels to the limit in half an hour.

In places the gorge has perpendicular walls, not more than fifty feet apart, polished as smooth as glass by glaciers and water. We had occasion to use the rope, and in two places were compelled to make detours up the mountainside. Although the gorge proper is not more than a mile in length, it is quite impractical to make a trail through it, as it would require at least three bridges and from ten to twenty thousand dollars' worth of powder work.

It is quite practical to make a trail a few hundred feet above the river through an open-timbered country, dropping into Kings River Cañon about a half mile west of Roaring River Falls.

From the lowest saddle in the Sentinel Ridge, some fifteen hundred feet above the floor of Kings River Cañon, and not more than a mile from the cañon, I ducked an old deer trail on about the sixty-five-hundred-foot contour, and the next day rode our horses to the junction of Sugar-Loaf Creek and Roaring River without dismounting. Here we found the old trail up Sugar-Loaf Valley to J. O. Pass.

If a trail were opened up through here, it would make it possible to ride from Giant Forest to Kings River Cañon in one day and open up a grand scenic country that is now very difficult to reach.

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LYELL FORK OF THE MERCED

In September, 1921, I had the pleasure of making a ten-day excursion into the Lyell Fork of the Merced River, a short account of which is as follows:

Leaving Merced Lake we ascended the McClure Fork Trail to the junction of the Isberg Trail, and continued thereon until a suitable camp-site was found near the stream which heads on the southwest slopes of Mount Florence and flows into the Merced just at the head of Lake Washburn. Our camp was at a considerable elevation and quite close to the rim of the Merced Cañon, from which, at this point, a marvelous panorama is obtained—all the peaks of the Merced group are in full view—but the most startling feature is the vista of Lake Washburn, over two thousand feet directly below. We ascended Mount Florence from this camp, meeting with no difficulties. This summit affords a most comprehensive view of a large part of the Yosemite Park, and many of the main elevations around the Yosemite Valley are easily seen.

We proceeded on the Isberg Trail until we reached the Lyell Fork of the

Merced; we then left the trail and followed up the cañon, which at this section is not too rough to prevent a burro from going through, although requiring a good deal of maneuvering to escape windfalls, etc. In less than a mile the cañon loses its ruggedness and opens into a fine level meadow, at the same time assuming a general easterly direction. The accompanying photograph (Plate LXXV) may give an idea of the extraordinary beauty of the scene that presents itself when these meadows are reached. The great rock-tower bears no name, and is undoubtedly inaccessible. The two peaks to the left of the tower are also unnamed. Electra Peak is not visible from this point, being farther up the cañon. The meadows are about nine thousand feet elevation. The fishing is fair, but the fish were quite thin. Above the meadows the cañon becomes very rugged and turns sharply to the north, terminating at the southern base of Mount Lyell. Rodgers Peak and Electra Peak are the two principal summits of the east rim of the cañon, the former being the most imposing. We attempted the ascent of Rodgers Peak, but were turned back when only two hundred feet from the summit by the perpendicular cliffs which guard this approach of the mountain's crest. The views we secured from this point, however, were truly grand and well repaid all our efforts.

Ansel E. Adams

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Popocatepetl, Mexico—Record of First Ascent

Hernando Cortez in a letter from Mexico City to Emperor Charles V, dated October 30, 1520, and printed in Seville in 1522, gives this account:

"Eight leagues from the city of Cholula are two very lofty and remarkable mountains, their tops covered with snow, and from the highest, by night as well as by day, a volume of smoke arises into the clouds as straight as an arrow.

"As I wished to ascertain the cause of this phenomenon, I despatched ten of my companions with several natives as guides. They went and struggled with all their might to reach the summit, but failed to do so by reason of the great quantity of snow and the whirlwind of ashes."

In a later letter, written May 15, 1522, and printed in 1523, Cortez tells of the successful ascent as follows:

"In my former letter I informed your Majesty of a conical mountain of great height, from which smoke issued continually. As the Indians told us it was dangerous to ascend this mountain, and fatal to those who made the attempt, I caused several Spaniards to undertake the ascent and examine the character of the summit. At the time they went up, so much smoke proceeded from it, accompanied by loud noises, that they were either unable or afraid to reach the mouth or crater.

"Afterward I sent up a third party of Spaniards, who made two attempts, and finally reached the aperture of the mountain whence the smoke issued, which was two bow-shots wide, and about three-fourths of a league in circumference; they also discovered some sulphur around it, which the smoke deposited. The Indians considered it a most remarkable undertaking."

M. Hall McAllister

Extracts from Journal of Trip to Zion National Park, Southern Utah, Kaibab Forest in Northern Arizona, North Rim of Grand Cañon, and Across the Cañon to the South Rim

By Breckenridge Armstrong

Sept. 13, 1921.—Away from Lund, Utah, in automobile at 10:45 A.M. Weather fine. Road good. Desert grayness relieved by beautiful patches of golden blossoms across the level stretch of thirty-four miles to Cedar City. Thence an uneventful but interesting drive of sixty-seven miles through a more rugged country, intersected with productive valleys. Arrived in late evening at Wylie Camp in Zion National Park.

Sept. 14th.—All day—and a truly marvelous day it has been—exploring Zion Cañon. Inevitably the mind reaches out for comparisons with more familiar places. Zion, with its valley approach and great walls, suggests Yosemite, but except for the topographical outline there is really little close resemblance. Here the tortuous Virgin River (North Fork) has ground its way, not through granite walls, but chiefly sandstone, producing a succession of great amphitheaters, which are amazing in their unique richness of coloring and variety of form. The cliffs, in very irregular and fascinating outline, rise from about eight hundred to three thousand feet above the river-bed (elevation, 3500), and the width of the cañon varies from fifteen feet, at "The Narrows," to about one-fourth of a mile as a maximum. Beautiful moon tonight and the crests of the cliffs east of the camp are bordered with stars shining jewel-like in this clear atmosphere.

Sept. 15th.—Weather continues ideal. A walk before breakfast, and then hastily made plans with Mr. B. for tramp to the rim above the cañon. The long, zigzag, very steep trail makes an elevation of about three thousand feet to the wooded plateau. It is a somewhat difficult climb, though not hazardous, and is intensely interesting, revealing several deep, narrow gorges which are miniatures, in the making, of the Zion Cañon. They afford striking geological lessons. The plateau has furnished lumber to the surrounding country for fifty years, and there is left only the smaller pine growth. The expansive view from the rim—thrilling and inspiring, too, looking into the cañon—was a rich reward for the energy expended.

Sept. 16th.—Leisurely walk far up the cañon. As I stood alone in the afternoon shadows in those vast amphitheaters I think I was more deeply moved by the tremendousness and weirdness of it all than on my first day's walk. The greatest single impression is perhaps that of El Gobernador (known by the Mormons as The Great White Throne), a rock approaching in its massiveness, and excelling in color, El Capitan or Half-Dome of Yosemite.

Sept. 17th.—Away from camp on horseback at 5:30 a.m. A beautiful calm moonlit morning. Was up to the steep rim trail when dawn came. We seldom realize, until forced to rise early to see the day approach, how much of beauty and joy we otherwise miss. Delivered the camp's horse to a rancher about seven miles back on the plateau, and soon made arrangements for a fresh mount to the village of Kanab, thirty-five miles from the ranch, through an interestingly varied country of plateaus, valleys, and desert. Great ridges of gypsum and some outcroppings of coal were visible. The auto road from Zion to Kanab is about 110 miles; my cross-country ride about forty-seven miles.

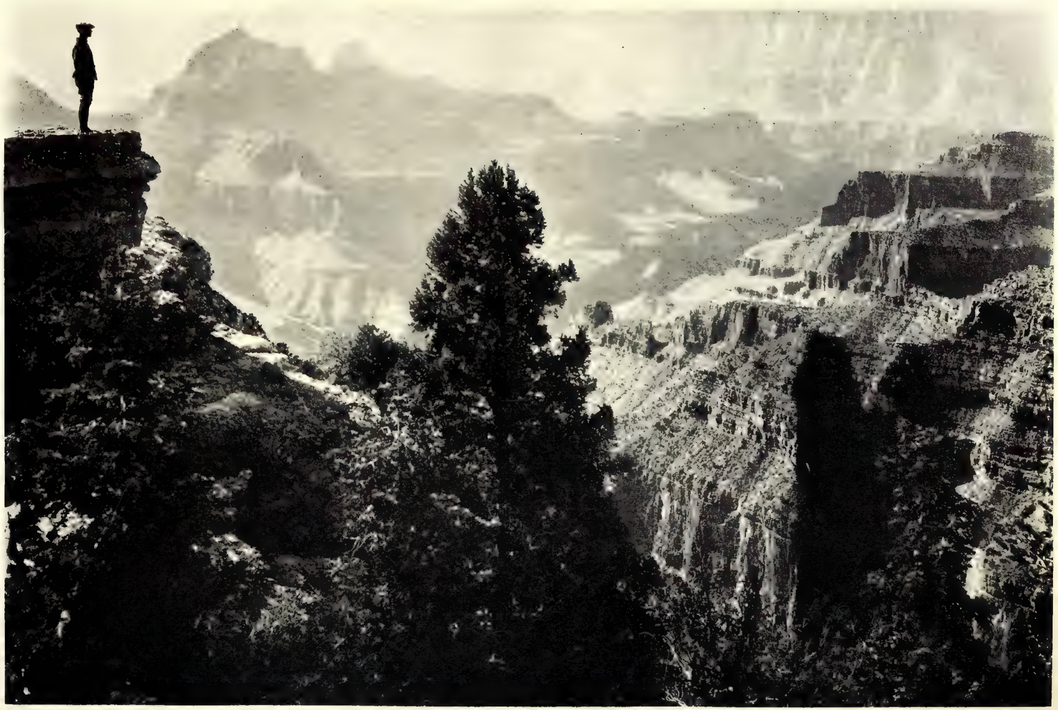
Sept. 19th.—Seven miles by automobile from Kanab across the Utah-Arizona state line to Fredonia, the only settlement in Arizona north of the Colorado River, thence eighty miles to the north rim of the Grand Cañon, the last fifty of which is over an excellent road through the Kaibab National Forest. One must go to the Pacific Slope for any forest of pines and firs near to the magnificence of this. And the one touch, if any, needed to accentuate its beauty was the flaming yellow groves of aspens as this afternoon's slanting sun-rays shone upon them. What a soul-satisfying approach was this to the Grand Cañon! In the open meadows literally hundreds of deer were feeding peacefully. Saw one specimen of the very rare white-tailed squirrel.

Sept. 20th.—On my first visit to the south rim of the Grand Cañon I attempted, and quit in despair, a word-picture of this overwhelming marvel of all of Nature's wonders, and I haven't the heedlessness now to make another futile effort. All day I've wandered and wondered and pondered here on the north rim. Tonight I'm at the camp (preparatory to tramping across the cañon) of Uncle Jim Owens, the famous cougar-hunter who guided Roosevelt through here a few years ago.

Sept. 21st.—Left camp at 7:15 A.M. Three miles exhilarating walk—air frosty—to head of Bright Angel Cañon (largest of the side cañons of the Colorado), whence is a superb view. The north rim is approximately thirteen hundred feet higher than the south. Then began the unique sixteen-mile descent. Encountered first necessary fording of the creek about 10:00 A.M. Principal growth is manzanita and scrub cedar. Shortly after noon overtook a young fellow tramping to El Tovar to seek work. As the cañon narrowed, the creek (five to twenty-five feet wide and not much over knee deep) became the trail in many places. Soon we reached the igneous rock walls, dark, rugged, and forbidding in their aspect. Then suddenly the narrow gorge widened, and at 4:45 P.M. we emerged at Roosevelt Camp, where two tents and some equipment are maintained by the Park Service. After preparing camp for the night we walked one-fourth mile to confluence of Bright Angel Creek and Colorado River, whence we were in sight of the new suspension-bridge one-half mile eastward. We had come from 8250 feet altitude to 2450, and had forded the creek eighty times. In the warm temperature (probably 75 degrees at 7:00 P.M.) we preferred the open to the tents, and as I lay there awake for an hour or more and thought of the nights I had experienced in so many different parts of the world, I could recollect none more nearly perfect. The great arch of the Milky Way was immediately over us, and the stars, seen from out of the cañon depths, seemed unusually brilliant and near, the environment grand and unique. Altogether it was a tranquil and soothing night to one accustomed to the turmoil of city life. Instead of gloomy and forbidding, as people looking down from the rim think the cañon must be, it did not seem so at all, as I had really come to know it now, but friendly and protective rather than awesome.

Sept. 22nd.—Shortly after 2:00 A.M., with the bright moon shining down upon us, we both awoke, soon had a light breakfast, and were on our way at

IN BRYCE CAÑON, UTAH
Photo by George L. Beam
Courtesy of the National Park Service



GRAND CAÑON OF THE COLORADO FROM BRIGHT ANGEL POINT

Photo by George L. Beam

Courtesy of the National Park Service

3:00 A.M. The immediate ascent, after leaving the suspension-bridge, is for fifteen hundred feet over a well-made but very arduous trail. We were well along the Tonto plateau by dawn. The transition from the moonlight, so bright had it been, was hardly noticeable until we faced about on a turn of the trail just in time to see the first rays of the sun illumine some delicate, fleecy clouds, turning them to ribbons of gold. Another beautiful day was upon us. Quite literally, we had "stolen a march" on it, and had already extracted from it three incomparable hours of interest, joy, and fascination. About 11:00 A.M. we reached the rim at El Tovar, twelve miles from Camp Roosevelt and forty-five hundred feet above the Colorado River. It had been a marvelously unique morning's tramp, one which I shall ever remember, and which I can compare, from the viewpoint of rare interest, even though the similarity of setting does not exist, only with a tramp I took a few years ago in India, leaving Darjeeling at 3:00 A.M. to go to the famous Tiger Hill to see the sunrise on Mount Everest, in the world's loftiest range of mountains. And doesn't one almost have to think of Everest, Kinchinjunga, and those other Himalaya peaks to make a colossally adequate comparison with the mightiness of this Grand Cañon?

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To the Members of the Sierra Club:

Two years ago, on Washington's Birthday, a nucleus of members of the Sierra Club organized the Contra Costa Hills Club for the purpose of endeavoring to conserve the natural beauties of the East Bay counties of California and to awaken a wider appreciation of their scenic charms.

Five of our fifteen directors are members of the Sierra Club. Several of our recent week-end walks have been taken jointly with Sierra Club parties, with the result that some mutuality of interest in the purposes of each club has been developed.

We are now engaged in an intensive publicity campaign to induce the Oakland City Council to halt the impending subdivision of the beautiful grove of redwoods above "The Heights" of Joaquin Miller. This region has long been a favorite objective of Sierra Club parties. The skyline ridge ramble to Redwood Peak has been termed "a classic" among local walks, according to a recent schedule.

We believe these redwoods are just as worthy of preservation as more distant groves which many of us may never see. These trees are for the most part within the border of the city of Oakland, and millions of future residents and visitors in the years to come should see them grow to maturity in a public preserve.

Inviting the co-operation of Sierra Club members in this campaign and in our other endeavors which they may approve, I am

Respectfully, HAROLD FRENCH

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Complete set of SIERRA CLUB BULLETINS, from January, 1907, to date, may be purchased at clubroom for five dollars per set (22 numbers).

NATIONAL PARK NOTES

ANNUAL REPORT OF THE DIRECTOR OF NATIONAL PARKS

(NOTE: The following paragraphs are taken from the annual report of the Director of National Parks, Stephen T. Mather, for 1921. This report may be obtained upon request from the National Park Service, Department of the Interior, Washingon, D. C. Besides commenting in a most interesting manner upon the larger aspects of national park affairs, it contains the detailed reports of the superintendents of the nineteen national parks and twenty-four national monuments administered by the Service. In making the following selections the endeavor has been made to bring out the matters most closely affecting the interests of the Sierra Club. In some instances the passages have been abridged and the connecting words slightly altered. A perusal of the complete report is recommended.)

THE SEASON OF 1921

The outstanding feature in this year's review of park achievements again is the remarkably heavy tourist travel. In spite of serious economic disturbances and general apathy of the people toward many public activities, it is significant that there should have been no diminution of the steady stream of visitors pouring through the park gateways. Surely this is conclusive proof that the parks are stabilizing and inspiring influences in times of national restlessness.

TRAVEL CREATES INSPIRATION

Is it not obvious, therefore, that our parks take their place at the head of those worth-while things in our national life that make for better citizens—that provide for clean, healthful diversion, recreation, and enjoyment? The exodus to the parks from the workshops and farms, the cities and towns, immediately after the close of the war as indicated by our own travel figures verifies this conclusively. There is no finer opportunity in the Americanization movement than to spread the gospel of the parks far and wide.

THE PEOPLE TREASURE THE PARKS

And, as a result of their visits, the people have learned to love these national areas as their very own—national assets in which every individual of every state in the Union has an inalienable right of possession. In no clearer manner was this demonstrated than by the immediate protest that rang from one end of the country to the other when efforts were made during the past year to utilize some of their streams, lakes, and waterfalls for commercial purposes. The appeals and protests to Congress were prompt and forceful, leaving no doubt regarding the temper of the public. From every section of the country was heard the demand that the parks must not be touched, and that the original purpose of Congress in setting them aside for all time for the people as a whole must not be lost sight of. The action of Congress, as the exponent of the people's wishes, was equally strong and prompt, and as quickly as possible a law was passed that in effect prescribed that no foot of national park or monument territory can ever be used for such purposes until and unless Congress itself has thoroughly considered the matter and given its consent in each individual case.

TRAVEL AND APPROPRIATIONS

It is of interest to make a brief analysis of our park appropriations and the revenues secured from their administration, in comparison with the volume of tourist travel for the past five years, which will cover the period during which the National Park Service has had charge of them. Perhaps no clearer convictions for the obvious need of increased appropriations can be gained than through an inspection of the following comparative table:

Year	Visitors		Automobiles.	Receipts	Appropriations	Estimates
	Parks	Monmts.				
1916	356,097	......	29,358	$177,490.69	$252,746.80	$ 280,850.00
1917	488,268	......	54,692	180,652.30	529,800.00	1,105,083.01
1918	451,661	......	53,966	217,330.55	512,180.00	1,008,318.20
1919	755,325	56,191	97,721	196,678.03	946,264.48	1,058,619.00
1920	919,504	138,951	128,074	316,877.96	884,850.76	789,380.00
1921 (to present time)	1,007,336	164,461	175,825	396,928.27	1,031,549.16	2,345,867.50
1922	....	......	......	....	1,402,200.00	2,488,004.50

WATER-POWER ACT AMENDED

A danger to our national parks and monuments that has been eliminated during the year was contained in certain provisions of the Federal water-power act, which became a law on June 10, 1920, and which opened all the national parks and monuments to water-power development. This bill had been signed by the President, however, only upon an understanding that amendatory legislation would be presented and passed at the next session of Congress which would exclude the parks and monuments from the scope of the act. After the convening of the new Congress last December Senator Jones, of Washington, introduced a bill in the Senate, and Representatives Esch and Rogers in the House of Representatives, for the purpose of so amending the act as to exclude the parks and monuments from its application. The amendment first under consideration provided broadly for the exclusion of all national parks and monuments from the operation of the act, but this, upon further consideration, was later changed, with the department's approval, to all existing parks and monuments. This was not done with the idea that there would be or could be any compromise with the principle of complete conservation as applied to national parks, but because any such provision applying to future national parks could be only an expression of intention rather than of fact, one Congress not having the power to bind another. It will be necessary, therefore, where applicable, to include provision for the application of the Federal water-power act as amended by the act of March 3, 1921, in future legislation covering the creation of new parks or the enlargement of existing ones.

As a further indication of the attitude of Congress, a clause was included in the appropriation for the Federal Power Commission contained in the sundry civil act approved March 4, 1921, providing that no part of that appropriation should be used for any expense connected with the leasing of water-power facilities in any national park or monument.

CONGRESS ON RECORD

In this conclusive manner Congress placed itself on record, upholding the inviolability of the national parks. Aside from the principles expressed in the creation of the National Park Service five years ago, never before has Congress so firmly and clearly enunciated the principle of complete national-park conservation.

EDUCATIONAL ADVANTAGES IN THE PARKS

Each season the advantages which the parks offer in an educational way become increasingly apparent. Probably no other areas offer such fertile fields for natural history exploration. Here the results of nature's activities remain undisturbed. One interested in zoology can select no better spot to study wild life in its native setting. The animals are almost fearless, for hunting in no form is permitted. To the ornithologist the parks offer full opportunity to observe the habits of our feathered friends. The student is free to roam at will with the camera. Nearly all the parks are wild-flower gardens.

YOSEMITE

Yosemite's normal travel curve shows a gradual rise which reaches its peak on or about July 4th. Previous to this year the peak has never shown more than six thousand people in the valley. During the season just passed, however, on June 21st, nearly two weeks before the normal peak, there were nearly if not quite nine thousand visitors in Yosemite Valley, of which approximately five thousand were in the free public camping-grounds. Just what the peak would have been had it been possible to allow the flow to continue it is impossible to estimate, but remedial measures had to be taken by warning broadcast of the shortage of accommodations, which almost immediately brought relief. Similar, but less intense, measures have had to be taken in previous years to hold down the peak to the capacity of the park accommodations, and similar unsatisfactory results have followed, namely, the idea prevails long after the situation has been relieved that accommodations are lacking, with the result that late season travel is seriously affected. Also, due to a confusion of park names in newspapers, such warnings have a detrimental effect on travel to the Yellowstone.

This situation is one to which I have given a great deal of thought, as it has been the cause of no little annoyance to visitors to the park who have gone there with the belief that they would secure first-class accommodations and have had to be content with anything in the way of a bed that could be secured. It can only partly be met by the installation of additional equipment, as I do not feel we would be justified in demanding that the park operators invest in sufficient equipment to meet the entire demands of this short-peak season. Rather the solution seems to be in a reasonable equipment increase from year to year and the carrying on of the campaign for extending the travel season over a longer period. April and May and September and October are quite as beautiful in Yosemite as are June, July, and August, and no one need miss its wonders through inability to come in these months of extremely heavy travel and congestion.

During the past season the trails from Harden Lake on the Tioga Road to Pate Valley in the bottom of the Grand Cañon of the Tuolumne River and down the same cañon from Glen Aulin to the lower of the Waterwheel Falls have been properly completed. There still remain to be built, in order to properly balance out the Yosemite trail system, and also to make more readily accessible the magnificent scenic area of the north half of the park, a trail from the lower Waterwheel Falls down the Tuolumne Cañon, approximately ten miles, to Pate Valley, and one from Pate Valley up Piute Creek to connect with the northern system.

SEQUOIA

Many notable achievements in various lines of activity have marked the year's operations in Sequoia National Park. The administrative and protective forces have been reorganized; better facilities for transacting Government business at summer headquarters in the Giant Forest have been established; roads and trails have been kept in a better state of repair than usual, and there have been extensions of the road and trail systems; construction work on the important Middle Fork road project has been started; and more of the private holdings in the park have been extinguished through purchase and donation to the United States.

The funds made available for the park for the current fiscal year amounted to $86,000, but $50,000 of this appropriation was granted for building part of the Middle Fork road from the valley of the Middle Fork of the Kaweah River toward the Giant Forest. This left only $36,000, the usual appropriation of the park, for all other items of administration, protection, maintenance, and improvement, a sum altogether inadequate to cover the ever-increasing needs of the park arising from enormous increase in volume of tourist travel. It is remarkable that with this small amount of money so much has been accomplished this year. It is interesting to note that in 1912, when 2923 people visited the park, the appropriation was $15,550, and the revenue amounted to only $305.16, while in 1921, exclusive of the $50,000 new construction fund, the appropriation was $36,000, and the revenues in excess of $20,000. In 1912, however, the revenues could be expended in the park, while now they must be deposited in the Treasury to the credit of miscellaneous receipts.

During the year the so-called Martin tract, an area of 640 acres, a school section acquired from the state and lying in the heart of the park near the Giant Forest, was purchased and donated to the United States, thus exterminating private title and restoring the land to Government ownership. From the standpoint of administration and park protection, the acquisition of this tract was exceedingly important, as sooner or later, had the land remained in private ownership, it would have been cut up into lots and made the scene of a summer-home development such as the Wilsonia project in the heart of General Grant Park, which has not only raised serious problems of administration, but has more or less desecrated the park. The Martin tract was transferred to the Government through the National Geographic Society, which aided in the purchase of the land and which has for years taken a leading part in the saving of the big trees of the Giant Forest region.

PROPOSED ROOSEVELT-SEQUOIA EXTENSION

This big-tree park of 252 square miles embraces not only Sequoia forests, but the lower fringe of one of the finest alpine regions of America. When rounded out by the inclusion of a thousand square miles of additional mountain territory, as provided in H. R. 7452, now pending in Congress, and providing for the creation of the Roosevelt-Sequoia National Park, this park will perhaps equal the Yosemite and Yellowstone in attendance, as it will in beauty. The pending legislation is a compromise bill, and excludes from the proposed enlarged park all debatable areas—that is, territory about which there may fairly be any question as to comparative value for vacation or commercial purposes.

This bill also cuts off three townships of the seven which now comprise Sequoia National Park. These three townships hold the Garfield, Atwell Mill, and other fine Sequoia groves as well as the glorious plateau country of Hockett Meadows. The additional proposed park area contains so much natural beauty and is so fitting for a vacation area that only the impossibility of securing by other means the Kern and Kings cañons with their adjacent mountain peaks, glaciers, and alpine lakes could reconcile the National Park Service to the loss of so much essentially park territory. In other words, we feel that we had better have a gerrymandered Roosevelt-Sequoia National Park than forego any enlargement and the inclusion of such pre-eminent features as Mount Whitney, the Kings and Kern cañons, and Tehipite Valley. Should the three southern townships be removed from the park, steps should be taken to protect the deer and other game, which for thirty years, since the creation of the park in 1890, have enjoyed a full measure of Government protection. A game preserve should be created. The Sequoia groves will, it is believed, be protected under any conditions.

LASSEN VOLCANIC NATIONAL PARK

The Lassen Volcanic is the only park in the system that was not actively administered for the traveling public by the National Park Service. Congress granted a small appropriation of three thousand dollars for the present fiscal year, which was expended, as was the small sum granted last year, under direction of the supervisor of the Lassen Forest through a co-operative agreement with the Forest Service in the improvement of an old existing road near the southwest corner of the park.

The area was and is considered of sufficient scenic and scientific interest to warrant its status as a national park, and is therefore entitled to proper protection and development, which can not be secured on an annual appropriation of even five thousand dollars, the limit of appropriation permissible under existing law. It is evident that this inhibition on the annual appropriation for the park must be removed before any worth-while steps can be taken to make the reservation accessible.

MUIR WOODS NATIONAL MONUMENT

The department has accepted two gifts of land to be added to the Muir Woods National Monument—one from Hon. William Kent and Mrs. Kent, the donors of the original monument area, and one from the Mount Tamalpais & Muir Woods Railway. These lands have been formally added to the monument by presidential proclamation signed by President Harding September 22d. These gifts of land are but another proof of Mr. and Mrs. Kent's enthusiastic interest in the monument, which has never flagged since they deeded the first tract to the Government for monument purposes in 1908.

A study of conditions in the monument in April by Mr. Kent and the field assistant of the National Park Service disclosed an unsatisfactory state of affairs in connection with the protection of the reservation. It was found that visitors have overrun the hillsides, departing from the trails and trampling down and destroying the ferns and other plant life that have always made a pleasing and refreshing carpet among the big trees; that there was a dearth of direction signs in the park area; that automobile traffic had become altogether too heavy for one narrow road through the woods; that more road and trail work should be done at once; and that the custodian was too advanced in years to longer care for the upkeep of the parkland.

Acting on the recommendations of the reports submitted to me, the custodian was relieved of his duties, and a younger man, a retired business man living in the near-by city of Mill Valley, was placed in charge, with authority to employ able assistance in the maintenance of the park area. The new custodian, Mr. Richard Festus O'Rourke, has for years been an active member of the Mount Tamalpais Conservation Club, and has taken a keen interest in the preservation of the landscape in the Mount Tamalpais and Muir Woods region. Since assuming charge of the woods he has accomplished very satisfactory results.

In line with another recommendation of my investigating committee, I excluded automobiles from the national monument and required that thereafter they should park immediately south of the Muir Woods. A parking space there was provided by Mr. Kent, who owns the adjoining land. The exclusion of the cars has already had a marked effect upon the vegetation of the woods, and it appears that it has stimulated in the visiting public a greater reverence for the forest, and with it a greater desire to refrain from acts of vandalism.

PINNACLES NATIONAL MONUMENT

The Pinnacles National Monument was established by presidential proclamation January 16, 1908, which reserved the area "from appropriation and use of all kinds under all the public land laws subject to all prior valid adverse claims." An area of 160 acres on the north edge of the monument was patented prior to its creation; therefore, the establishment of the monument was of no effect in so far as this tract of land is concerned. Within recent years this tract passed to its present owner, the Copper Mountain Mining Company, of California, which has fenced off entrance to the property, which is also the main entrance to the monument, and is charging a fee of fifty cents from visitors desiring to pass through.

Local residents who have visited the monument for many years claim that access to the monument area was maintained through this property, and that by right of usage the road or trail is a public highway. This is a question of fact which can be determined only by legal process, and the San Benito County authorities have been urged to determine this.

PROPOSED PALM CAÑON NATIONAL MONUMENT

At the present time we are greatly interested in the possibility of adding to our national monument system a tract of land in southeastern California on which the stately Washington palms (*Washingtonia filifera*) are growing.

The cañons of native Washington palms are a few miles south of the village of Palm Springs, and constitute the greatest surprise of all the unexpected things seen on a trip in this land of climaxes. There are three of these cañons

—Palm, Andreas, and Murray—all in comparatively close proximity to each other, and each contains scores of specimens of these interesting and really beautiful palm-trees. Palm Cañon is the largest, and for a distance of ten miles the native palms grow along the shores of the little stream that flows through it. Most of the trees, however, are concentrated in relatively small areas in each of the cañons near the point where they leave the hills. The streams leave these cañons by tortuous routes; hence it is impossible to see into them from points along the highway. It is necessary to visit each cañon in turn and ascend to points considerably above their floors in order to look into them and reach their palm groves. Hence the supreme surprise of the visitor making his first trip. He sees no palms or indication of them as he rides through the desert south of the village; he ascends through vast areas of desert flora the foothills of the San Jacinto Range; suddenly he reaches a ridge and gazes downward into a cañon filled with palms centuries old.

(NOTE: The status of the Barbour Bill to establish the Roosevelt-Sequoia National Park was on March 1, 1922, that it had been reported to the House of Representatives by the Public Lands Committee with the recommendation that it do pass, with amendments protecting the enlarged park from water-power applications under the Federal Power Act, and making a slight addition to the boundary along the western side of the present park to take in the slope down to the North Fork of Kaweah. The only opposition to the bill appears to come from the Municipal Power Bureau of Los Angeles, which has filed applications for power-sites on the Kings River Cañon, Paradise Valley, Tehipite Valley, and Simpson Meadow. It has been suggested to the Bureau that it withdraw these applications in recognition of the wide-spread desire for this park, and also of the great advantage to the city of Los Angeles of such a recreational area, but such withdrawal has not yet taken place. The bill is likely to come before the House for action very soon, and if passed will go to the Senate, where it will probably be submitted to the Senate Committee on Public Lands.)

DAM ACROSS YELLOWSTONE RIVER

Hon. CHARLES L. McNARY, June 1, 1921.
Chairman Committee on Irrigation and Reclamation, United States Senate.

MY DEAR SENATOR: I am in receipt of your request for report upon S. 274 and 275, proposing to authorize the State of Montana, or irrigation districts authorized by the State, to build a dam across Yellowstone River at a point not more than 3 miles below the outlet of Lake Yellowstone, for the regulation of the waters of the lake for irrigation purposes. This construction would be within the limits of the Yellowstone National Park.

I can not favor the enactment of the measure. I do not believe it would be advisable for Congress to permit private interests to develop irrigation or power sites within the limits of existing national parks. These parks were created by Congress for the preservation of the scenery, forests, and other objects of beauty and interest in their natural condition, and they are created and maintained for general and national purposes as contradistinguished from local development.

If cases be found where it is necessary and advisable in the public interest to develop power and irrigation possibilities in national parks, and it can be done without interference with the purposes of their creation, I am of the opinion that it should only be permitted to be done, whether through the use of private or public funds, on specific authorization by Congress, the works to be constructed and controlled by the Federal Government.

Sincerely, ALBERT B. FALL, *Secretary.*

FORESTRY NOTES

The Year with Our Forests

By Walter Mulford

It has been an eventful year with our forests, in forest preservation, in forestry, and in lumbering. On the whole, the forests have reason to be well satisfied with the year. Because of the business depression, the lumbermen have not fared so well.

FOREST PRESERVATION IN THE REDWOODS

The year 1921 brought notable progress in the efforts of the Save-the-Redwoods League to preserve a reasonable area of virgin redwood timber in the coast counties north of San Francisco. Dr. John C. Phillips, of Wenham, Massachusetts, deeded to the league a splendid grove in Humboldt County, at the junction of Elk Creek and the South Fork of Eel River. This tract, the Bolling Memorial Redwood Grove, was dedicated on August 6, 1921, in memory of Colonel Raynal C. Bolling, brother-in-law of Dr. Phillips and the first American officer of high rank to die in action in the Great War. Later in the year the league purchased a second area of forty acres adjoining the Bolling Grove, deriving the funds from membership dues and special contributions. The league has now deeded both areas to the State of California as public parks. Arrangements are almost completed for the purchase and deeding to the state of a third grove, the gift of a Californian.

The league's outstanding effort for the year was its campaign in conjunction with the State Board of Forestry and other agencies, to secure funds from the State of California for the purchase of redwood groves along the State Highway in Humboldt and Mendocino counties. The result was an appropriation by the 1921 legislature of $300,000 for the purchase of redwood lands. The State Board of Forestry, by which the funds are administered, has been active, and it is hoped that something over two thousand acres of redwoods will soon be the property of the people of California as a result of the appropriation.

An excellent start has been made. But if any adequate sample of the great coast redwood forest is to be retained, it must come about partly as the gift of many more groves from many individuals and organizations. Even this will not be sufficient. We should have not only groves, more or less scattered, but also a large unbroken area of untouched redwood, such as, happily for us, can still be found if action is not too long delayed. This can probably be secured only by a national movement to bring about a federal appropriation for the purchase of a redwood national park. It is expected that a report will soon be made to Congress as to possible locations for such a park.

It is gratifying to be able to report mutual good-will between the league and the redwood lumber companies. Commercial interests recognize the reasonableness of preserving certain areas, and the redwood companies, both individually and through the California Redwood Association, have been of great assistance to the league in several ways. Among these should be mentioned the voluntary postponement of logging at certain points, at great inconvenience and real financial loss, and the support of the campaign to secure a state appropriation. On the other hand, the league recognizes that most of the redwood timber should be cut, and its avowed policy is to injure or hamper legitimate redwood lumbering just as little as possible.

FORESTRY IN THE REDWOODS

A Long Step Ahead.—Within the last six months the principal lumber companies operating in the coast redwoods of California have taken a step which may result in placing the redwood region ahead of all other lumber-producing districts of the United States in the practice of forestry on privately owned timberlands. The Glen-Blair Lumber Company, the Hammond Lumber Company, the Little River Redwood Company, the Mendocino Lumber Company, the Pacific Lumber Company, and the Union Lumber Company have all initiated a thorough study of the possibilities of managing their timberland holdings on a "sustained yield" basis; in other words, of so conducting their operations and the care of second-growth timber on their cut-over lands as to insure a permanent yield. It is important to note that the six companies thus interested produce approximately two-thirds of the redwood lumber now marketed. The investigation is being made by Major David T. Mason, who resigned his professorship of forestry at the University of California in June, 1921, in order to open an office as consulting forest engineer in Portland, Oregon. If the results of the study show that permanent forest management has now become a financially sound possibility in the redwoods, and if the operating companies definitely organize their activities on that basis, the future of the redwood region will indeed look bright. Permanent forest management spells permanent communities with permanent industries. Well-kept second-growth redwood will mean the maintenance of much of the beauty of the region, without, of course, the incomparable grandeur of the original redwood forest.

Forestry at Fort Bragg.—Meanwhile, the Union Lumber Company, which has for years been a pioneer in its interest in forestry, has gone much farther than a study of possibilities. Within the year it has definitely adopted the policy of managing its lands for the perpetual production of crops of timber. It has taken the first steps in the preparation of detailed plans for carrying out that policy. It has organized a forestry department, with a graduate of the Division of Forestry of the University of California in charge. It has established a forest nursery, to supply trees for assisting by planting the natural restocking of cut-over lands. The holdings of this company, which is one of the three largest redwood operations, are in Mendocino County near Fort Bragg.

Raising Hardwoods at Home.—Among the forest plantations established by the Union Lumber Company is one of special interest to those who would like to see California produce its own oak flooring and other high-grade hardwood products. In an experimental area planted near Fort Bragg in 1921, in cooperation with the Division of Forestry of the University of California, six important eastern hardwoods were used: red oak, white oak, sugar maple, white ash, basswood, and black walnut. It is to be hoped that the redwood region can advantageously produce these timbers, thereby saving the transcontinental haul of a very heavy and bulky product.

Remarkable Growth on Cut-Over Redwood Land.—A significant index of what may prove to be the possibilities in raising crops of redwood is seen in the result of a measurement made by the Division of Forestry of the University of California in July, 1921. At the age of fifty years, a second-growth redwood forest in Mendocino County contained more than one hundred thousand board-feet of timber per acre. A good forest of virgin spruce timber in the Adirondacks contains about ten thousand board-feet per acre. The redwood area measured was, however, on good bottom land. On ordinary soil, the growth cannot be expected to approach this figure. Measurements of the yield on other areas are now being made by the University of California.

Conservation by Proper Use.—The California Redwood Association is definitely furthering two other forestry principles: reduction of waste of existing timber, and the use of each species of timber for those purposes for which it is best adapted. During 1921 the Association has made a preliminary study of waste of redwood in logging and at the sawmill. The work was done by the California District of the United States Forest Service and the Division of Forestry of the University of California. Certain possibilities in reducing waste, as developed by the preliminary investigation, will be studied in greater detail in 1922. Also during 1922 a scientific study will be made of the purposes for which redwood lumber is best suited because of its physical and mechanical properties. Already, in its 1921 advertising campaign, the association has announced as its policy the encouragement of the use of redwood for purposes to which it is best adapted, and the discouragement of its use where inferior and cheaper woods will do as well.

IN THE NATIONAL FORESTS

Recreation.—The use of the California national forests for recreation continues to increase. Last season there were more campers than ever before and campground facilities were entirely inadequate. It is estimated that one and a half million people used the national forests of California in 1921, of whom fully eighty-five per cent carried their beds. Some of the public camps were used by from three thousand to fifteen thousand people. Principally through funds contributed by co-operators, about sixty camps have been improved or partly improved by the Forest Service. There are about three hundred additional camps awaiting improvement, but Congress furnishes no funds for this purpose. As a consequence sanitary conditions are poor at many places, and will continue so until funds from some source can be provided. The best-improved camp is the one on Lake Tahoe, donated to the Forest Service by William Kent.

Through the construction of four miles of road by the Forest Service, the beautiful Mammoth Lakes region above Mammoth has been opened to the tourist and camper. A recreational survey of the area has been made, and the demand is already great for a public camp and summer homes.

Land Exchange.—More than a half-dozen bills are before Congress affecting land exchanges in California national forests. There should be a better public understanding of what it is all about, and a fuller realization of the desirability of the general principles involved.

The boundaries of the national forests of the United States enclose a total area of about 174,000,000 acres, which is about one and three-fourths times the area of the State of California. But of this area about 20,000,000 acres are in private ownership—an area about equal to the total agricultural land in California. The private holdings within the national forests are, however, mostly non-agricultural, and they are largely the property of lumber companies. Often the privately owned areas so seriously break up the continuity of the national forest lands as greatly to embarrass forest management and fire protection. After the logging of the merchantable timber, the cut-over areas may not form an asset of much value to the lumber company. This is particularly true when they are owned by companies not interested in producing a permanent yield, or when the lands are so located as to form in themselves an undesirable unit for permanent forest management. On the other hand, the lumberman often needs and should have the mature timber of the national forests. Ordinarily he pays cash when buying the government timber. But in the last few years the idea of land exchange has been steadily gaining.

The most desirable principle of exchange is that of privately owned cut-over land in return for national forest standing timber to be logged by the lumberman. At least two advantages accrue to the public: consolidation, or greater continuity, of the national forest and an increased area devoted to the production of timber crops, recreation, and the control of stream-flow. Where such exchange is not feasible, other types may be desirable; for example, the interchange of both land and timber in order to consolidate the holdings of each party.

An exchange bill for the Sierra Forest was enacted in 1920. At present bills are pending for the Eldorado, Klamath, Plumas, Sequoia, Shasta, Stanislaus, and Tahoe forests. General legislation intended to authorize land exchange in all national forests is also proposed.

Possibility of a Forest Experiment Station for California.—The Forest Service hopes that its investigative work may be developed and concentrated through the establishment of a strong federal forest experiment station in each of the principal forest districts of the United States. At the last session of Congress certain of these stations were established in the East. The bill providing for the one in California failed to carry because of the lack of public pressure from California. The bill has been introduced again in the present session of Congress. A state in which the forest plays so important a rôle as it does in California should see to it that it does not fall behind in forest research.

The Fire Season.—On the timbered national forests north of the Tehachapi 887 forest fires were reported in 1921, which is noticeably below the average of 1050 per year for the last decade. An unusual feature of the season was the small number of lightning fires: 175, as contrasted with the yearly average of 435 for the last ten years, with a maximum of 705. Incendiary fires numbered 72, which is below the ten-year average. There was an increase in the number of campers' fires, corresponding closely to the estimated increase in travel in the national forests.

There were about 400 fires on the three national forests of southern California. A bad situation prevailed on the Santa Barbara Forest during the greater part of the season, and a very large area of brush was burned at a fire-fighting cost to the Forest Service of over $55,000. The record on the Angeles and Cleveland forests was one of the best in years. The worst fires in southern California occurred coincident with and immediately after the opening of the hunting season.

The Airplane Patrol.—Of the six hundred forest fires in California reported by the airplane patrol during the past season, probably 150 were reported by that patrol before they were discovered by any other agency. The reports were by radio in 480 cases, and of this number 420 were reported from the planes to the forest rangers within ten minutes after they were discovered by the observers. This establishes a record for quick communication and demonstrates the efficiency of the radio in such work. The observers also did good work in locating the fires, three hundred fires having been located from the planes within one quarter of a mile.

The forest air patrol is handled as a co-operative project between the Air Service and the Forest Service. Under the terms of the co-operation the Air Service furnishes the planes (DeHaviland 4-B, equipped with twelve-cylinder Liberty motors), with pilots, observers, and mechanics. The Forest Service handles the reports after they are received from the observers, and has charge of the fire-fighting forces.

The radio was tried on a more extensive scale than in previous seasons and proved to be a decided success. Fifteen radio receiving stations were established at Forest Service headquarters throughout California, and were manned with amateur radio operators employed by the Forest Service.

The usual schedule was for the patrols to leave their main bases, at Corning, Mather Field, Visalia, and March Field, about eight or nine o'clock in the morning, stop at the sub-base at noon for lunch and for taking on gasoline and oil, and return to their bases in the afternoon. To allow for overhauling and repairs, it is estimated that two or three planes are required for each patrol route. The total number engaged in flying the California patrols this season was therefore between twenty-five and thirty.

The Forest Service prepared emergency landing-fields along the patrol routes on the forests, for use in case of engine or other trouble. These are of great importance, because fields where a safe landing might be made are scarce in the mountains.

Timber and Pulpwood.—Timber sales in California national forests from January to October, 1921, inclusive, reached a total of 726,029,000 board-feet. This includes a sale of 597,000,000 board-feet on the Sierra Forest, the second largest sale ever made in the California District of the Forest Service. The timber actually cut during the same period was 101,511,000 board-feet.

The increasing scarcity of woods suitable for the manufacture of paper pulp and the constantly growing consumption of that product made it desirable that the Forest Service take a careful inventory of the pulp resources of California. The report is now ready. It presents a general view of the pulpwood situation in the state, together with a detailed description of a few particular locations which offer the best opportunities for establishing the industry in this region.

WITH THE SIERRA LUMBERMEN

Fire Protection.—The pine lumbermen of California are co-operating splendidly with the Forest Service in fire protection. (There are no national forests in the redwood region.) With few exceptions they turned over all their holdings to the Forest Service for fire protection during the 1921 season, paying the Government an average flat rate of one and one-half cents an acre for the service. Almost four million acres of private timberlands were given protection by this co-operation.

The California White and Sugar Pine Manufacturers Association has endorsed in principle the law proposed by the California State Automobile Association providing for compulsory fire patrol on privately owned forest lands; but in view of the fact that, with few exceptions, every large owner of pine timberland in California is now co-operating with the United States Forest Service in fire protection, a reasonable time was requested to secure the co-operation now lacking. At the expiration of that time it was the recommendation of the Association that the California Forestry Committee be instructed to draw up an act to meet the situation.

Support of Legislation.—The Pine Association has actively and effectively supported the State Board of Forestry in several important directions. It has also vigorously indorsed the McNary-Sinnott Bill covering a federal appropriation for the purpose of fighting the insects threatening western yellow pine in southern Oregon and California. The bill is now under consideration in Congress and every effort is being made to secure its passage. The association has made arrangements to assemble the pine-timber owners this winter to discuss ways and means of preventing the entrance of white-pine blister-rust into the sugar-pine forests of California.

Lumber Grades.—The official lumber-grading rules of the Pine Association have been revised in the interest of clarity, in order that consumers of California pine products may know definitely what character of material they may expect under the various grade designations. It is difficult to put on paper an exact description of a lumber grade, since no two boards are alike; but an attempt has been made to include within grade limits all material suitable for specific uses.

Deer Season.—During the legislative session of 1921 the Pine Association actively co-operated in an endeavor to postpone the opening of the deer season for the purpose of reducing fire hazard. This attempt was successful; but it is believed that in some sections of California a further postponement is advisable, and such a request will probably be made at the next session. The owners of timberland in the pine region feel justified in posting their lands and preventing hunters from using them so long as they constitute a menace.

Yield-Tax.—The Pine Association considered and adopted the position taken by the California Forestry Committee with reference to the proposed State Constitutional Amendment No. 14. The amendment proposes to give the legislature authority to provide by general and uniform laws for the taxation of *land*, on which there is standing young timber or mature timber, separately from the *timber* itself; and for the taxation of the timber only at the time it is cut or otherwise utilized. The association disapproved the amendment, but considers desirable a thorough investigation by competent experts of the tax situation in connection with mature timber, including the possible application of the yield-tax thereto.

Pine and Redwood.—The California Forest Protective Association, an organization of both pine and redwood owners, has taken action favorable to the State Board of Forestry, fire control and slash disposal, airplane patrol, and federal legislation for the control of pine beetles, and for a certain measure of control of logging on private lands. It has also prepared and distributed a series of papers on "Timber Growing."

For the first time since 1915, the Pacific Logging Congress and the Western Forestry and Conservation Association met in California. Both meetings were held in San Francisco, and were well attended by California pine and redwood lumbermen.

AT THE STATE FORESTER'S OFFICE

Personnel.— The State Board of Forestry has suffered the loss by death, following a long illness, of Mr. G. Morris Homans, for many years State Forester of California, and widely known throughout the state. Mr. Merritt B. Pratt, who has been Deputy State Forester for some time, has been appointed State Forester. Mr. Solon H. Williams, of Yreka, succeeds Mr. Pratt as Deputy State Forester. Mr. Williams at the same time retains his place as a member of the State Board of Forestry.

Proposed Change in Organization.—An attempt was made in the 1921 legislature to transfer the forestry work to the State Department of Agriculture. The lumbermen and other parties joined in a vigorous protest, and the change was not made.

Major Work.—The major projects of the State Board of Forestry in 1921 were in fire prevention and suppression outside the national forests and national parks; the maintenance of the state forest nursery at Davis plans for the planting of trees from this nursery along highways, which will begin this winter; and the acquisition and plans for the maintenance of a State Redwood Park in Humboldt County.

Fire Protection.—The state made a notable increase in its fire protection force in 1921, thanks to increased state appropriation and federal funds derived through the Weeks Act. Twenty-five state fire rangers were on duty during the season, giving systematic protection to about twenty million acres, located in twenty-six counties, at a cost of about two and one-half mills per acre.

State Redwood Park.—The acquisition of land for the State Redwood Park is mentioned elsewhere. It is planned to build an administration building next spring near the middle of the park area. The various groves are to be cleaned up, sanitary conveniences will be installed, and the park made generally available for public camping.

LOS ANGELES COUNTY FORESTRY

Los Angeles County has acquired a ten-acre nursery tract in Altadena, to serve as a permanent reforestation nursery. Several forest plantations have in the past been established by the county on burned areas on mountain watersheds. Two hundred miles of ornamental planting along the highways of the county are under the care of the County Forester. His department has charge of the grounds around county institutions, and county parks, including Monte Vista Park in the Crescenta Valley.

The County Forester is also County Fire Warden and County Game Warden. He has a force of about one hundred and fifty voluntary fire wardens scattered throughout the county. Twelve fire-fighting trailers have been procured. A main fire-line (fire-break) has been built for about twenty miles along the main ridge of the Santa Monica Mountains from Topango Cañon to Laurel Cañon. This was financed by local landowners in co-operation with the county.

DANGER!

The Sierra forest may soon face a dangerous enemy. The white-pine blister-rust is a destructive disease attacking five-needled pines. It is a native of Europe, and was not found in this country until 1906, having been introduced on nursery stock. It is now established in New England, New York, Minnesota, and Wisconsin. It was hoped that it might be prevented from reaching the West by the fact that there are no five-needled pines on the Great Plains. But it was found in British Columbia a few months ago, and since that time has been reported from the State of Washington.

Seven western pines are subject to attack: sugar, western white, limber, white-bark, foxtail, bristle-cone, and Mexican white. The first two are among the half-dozen greatest western timber-trees. All seven add greatly to the beauty of our western mountains. Vigorous measures are now under way to attempt to stamp out the disease in the West. Only the future can tell how the fight will go.

BOOK REVIEWS

EDITED BY MARION RANDALL PARSONS

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BOREAL FLORA* Profound physical change due to altitude and psychic domination by a new and grand topography are undoubtedly the chief contributing influences which render visits to high mountainous regions both beneficial and refreshing. But the enjoyment of acquaintance with new plants and animals is surely not the least of the pleasures connected with such experiences or one of the least of the reasons for "exploring and rendering accessible the Sierra Nevada Mountains" and similar regions in our West. With faith in this *gospel of the mountains,* the Sierra Club member notes with peculiar interest every scientific study of his field. Dr. Smiley's meritorious publication is essentially a list of High Sierran plants. It is not a pocket manual for the determination of the plants, but the addition of descriptions (which are totally lacking) would have made it possible to use it in this way in spite of its bulk. Furthermore, keys are provided for family, genera, and specific determination. It is unfortunate that varieties are not keyed, because they have been included, and a word or two in the key would have been adequate. References are made to the original places of publication. Because of this manner of handling its matter, the book, of course, will not be employed in the field as is, for instance, Hall's *Yosemite Flora.* Dr. Smiley's compilation has some distinct advantages over the beautiful little Hall manual, for it includes, for instance, the boreal flora of the entire range, and not merely of the Yosemite region, and furthermore includes the grasses, sages, and rushes which are not in the Hall manual. Its restriction to the "boreal" region will not be a hardship on the floral studies of the actual mountaineer, for this is his territory *par excellence.* By it Dr. Smiley means to include the Canadian, Hudsonian, and Arctic-alpine zones of Merriam or the country fringing the upper part of the main forest belt and extending to the summit of the range. In the Yosemite region it is quite exactly the particular glorious country from the top of the rim of the valley to the Sierran crest itself. Dr. Smiley's immensely valuable "report" is preceded by a discussion of the geography, petrology, topography, climatology, and life zones of the High Sierra, and is illustrated with seven half-tone plates (unfortunately not indexed) which show strikingly the various aspects of the Sierran vegetation and which are beautiful in themselves. Some of the highly interesting preliminary discussions one wishes were even more extensive—for example, that of the so-called "life-zones"; some of them—for example, those on the geology and petrology—seem clearly in excess of botanical significance or use, or, at any rate, such relations have not been well developed by the author. The bulk of the publication is chiefly due to the fact that the

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**A Report upon the Boreal Flora of the Sierra Nevada of California.* By FRANK JASON SMILEY. University of California Publications in Botany, vol. IX. Pages, 1-423; plates, 1-7. September, 1921. Price, $5.00.

list, or "report," is supported by detailed mention of herbarium specimens examined by the author. The life-zone concept is of the very greatest interest—and with what peculiar zest can Sierra Club members contribute to our knowledge here! For the plants do not always keep within their proper life-zones—if we delimit the latter by altitude alone. High plants come down and lower ones climb up, wherever local favoring influences permit these extensions of their range. One of the most interesting of all phenomena, for instance, is the non-identity in an ecological sense of the shaded south wall of our deep east-west cañons like Yosemite and the sunny north wall of the same cañon. On the latter slopes, which are fully exposed to the sun, one may be surprised to find plants commonest a full thousand feet or more lower in altitude. Thus, Dr. Harvey M. Hall tells me he has encountered the Soap-Plant (*Chlorogalum pomeridianum*) belonging to the Upper Sonoran at the base of the upper Yosemite Falls, and conversely, while crossing moist places on the opposite cañon, found beds of *Dodecatheon alpinum* of the Canadian zone as low as forty-seven hundred feet.

Dr. Smiley's work is undoubtedly intended for experts in this field, but it can be employed to a considerable extent by those without such knowledge, and should interest Sierra Club members further because of the need for such an authoritative list by which the amateur may "check up" his findings. The expert will view with interest the decision of the author as to terminology, and complain, for instance, that he occasionally adopts names which are overruled by his own comment, so that it appears he has not sufficiently the courage of his convictions—e. g., *Saxifraga ledifolia* for *S. Tolmiei, Mertensia stomatechioides* for *M. ciliata*, etc.—or if not so interested in the author's critical opinion in synonomy, will value it chiefly for its habitat-range and zone-notes. Here again the author may be asked as to why *Gilia tinctoria* or *Viola Sheltonii* do not deserve admission to the boreal group of the region, for they are not strangers to the Canadian zone.

The work has wider significance. It is significant that a scholar has combined actual field experience in the Sierra with access to eastern libraries and herbaria where many of the type specimens are stored, and has enumerated the plants which he thinks must be recognized as belonging to the high mountain flora of the Sierra Nevada, with specific notes as to type locality, the range of the plant, and its typical life-zone. Exactly such a list has not hitherto been compiled, and its existence will not only aid other botanists but those of humbler aim who live during a portion of each year for some enchanting days amidst the flower gardens of our Alps. HERBERT M. EVANS

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EDGE OF THE JUNGLE* If William Beebe does not start the nature-loving folk of the United States on annual pilgrimages to the tropical jungles of British Guiana in South America it will not be his fault. This latest of his books contains more of his experiences in this region, told with all the charm of his earlier companion volume, *Jungle Peace*. The first chapter,

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**Edge of the Jungle.* By WILLIAM BEEBE. Henry Holt and Company, New York. 1921. Pages, 303. Price, $2.50 net.

"The Lure of Kartabo," takes the reader to the mingling of the Mazaruni and Cuyuni rivers and introduces him to wily jungle folk like the vampire bat and the dainty coati-mundi. "The Home Town of the Army Ants" is a chapter dealing with the community life and foraging methods of the army ants. The parceling out of functions among various classes of these incredibly active creatures borders on the marvelous. But Mr. Beebe is more than a naturalist. Everywhere on his pages one catches glimpses of our human world in relation to the varied life of this planet, past as well as present. Let me quote this opening gambit of his last chapter—"Sequels": "Tropical midges of sorts live for a day—sequoias have felt their sap quicken at the warmth of fifteen hundred springs. Somewhere between these extremes, we open our eyes, look about us for a time and close them again. Modern political geography and shifts of government give us Methusalistic feelings—but a glance at rocks or stars sends us shuddering among other motes which glisten for a moment in the sunlight and then vanish. We who strive for a little insight into evolution and the meaning of things as they are forever long for a glimpse of things as they were." The continuation is equally engaging. This book is worth more than it costs.

W. F. B.

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LAKE MAXINKUCKEE[*] This work, in two portly volumes, is a physical and biological survey of a lake in northern Indiana. The joint authors are Dr. Barton Warren Evermann and Mr. Howard Walton Clark, of the U. S. Bureau of Fisheries. Such a work as this must be read to be appreciated. It is published by the Department of Conservation of the State of Indiana, and in his foreword Richard Lieber, director of this department, describes it as "truly a scientific classic and without a peer in its field." The last statement probably is well within the facts, for since Conway Macmillan's *Minnesota Plant Life* appeared I have seen nothing at all like it, and its scope is much larger. Here we have a description of the hydrography, meteorology, and biology, the latter including a complete survey of the fish, mammals, birds, reptiles, amphibians, insects, mollusks, crustaceans, leeches, worms, sponges, plankton, algæ, plants, etc., that live in and about the lake. There are numerous fine illustrations, thirty-five of them colored plates. Teachers of natural science, as well as the general reader, will find this a most interesting and informing work.

W. F. B.

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LIFE OF DE SAUSSURE[†] *The Life of de Saussure,* by Douglas W. Freshfield, is the tribute of one great mountaineer to another. For over half a century Mr. Freshfield has stood as one of the leading representatives of modern mountaineering. As an explorer in the Alps, the Caucasus, and the Himalayas, he has done much to give mountaineering an important part in the scientific life of the day, as well as to establish it as one of the arts of sport and recreation. There could be no one better fitted, therefore, than Mr. Freshfield to place before us with fullness and accuracy the events in the life of a great mountaineer and to pass judgment upon mountaineering achievements.

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[*] *Lake Maxinkuckee; A Physical and Biological Survey.* By BARTON WARREN EVERMANN and HOWARD WALTON CLARK. Published by the Department of Conservation, State of Indiana. 1920. Vol. I; pages, 660; vol. II; pages, 512.

[†] *The Life of Horace Benedict de Saussure.* By DOUGLAS W. FRESHFIELD, D.C.L., with the collaboration of Henry F. Montagnier. Edward Arnold, London. 1920.

De Saussure was the first great mountaineer in the modern sense. Others before him had climbed mountains, had made memorable explorations, had written with charm and literary skill; but hardly until de Saussure do we find the modern spirit of the love of mountains combined with scientific purposes and dependable accuracy. Living at a time when mountains were still commonly regarded as awful and horrible, if not indeed actually hideous, de Saussure came to know them at closer range than his contemporaries, and learned to perceive their beauty and sublimity. Moreover, he saw in the lofty peaks of the Alps, visible from his home in Geneva, an almost untouched field for scientific exploration in the realms of physics, geology, and botany.

In 1760 de Saussure first visited Chamonix and beheld Mont Blanc. During the next thirty years this mountain was a controlling interest in his life. He was not the first to climb it, but it was his inspiration that prompted the first ascent. In 1787, a year after Dr. Paccard and Jaques Balmat had conquered the monarch of mountains, de Saussure organized an expedition, made the ascent himself, and spent three crowded hours on the summit engaged in scientific observations.

Mr. Freshfield acknowledges the valuable assistance of Mr. Montagnier, whose exhaustive knowledge of Alpine literature brought to this work a vast amount of information.

The Life of de Saussure is much more than a chronicle of mountain climbs; it is a portrait with a background. The chapters on "Forerunners," "Geneva in the Eighteenth Century," "Politics and Home Life," and "De Saussure in Science and Literature" create an atmosphere that enables us to comprehend the motives and share in the enthusiasms of that eighteenth-century mountain-lover and servant of science.

FRANCIS P. FARQUHAR

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MCLOUGHLIN AND OLD OREGON* The story of the early American settlements in Oregon and the opposition they met from the Hudson Bay Company, is here told as the life-drama of Dr. John McLoughlin. As Chief Factor for the company over all territory west of the Rockies, his establishment at Fort Vancouver was more like the court of a feudal chief than the post of a fur-trader. McLoughlin's loyalty to England and to his company was questioned because of his generous kindness to starving American missionaries and immigrants. He dealt with these as individuals in a dire need, and at the same time he maintained the Hudson Bay Company's policy of not allowing settlements to interfere with their trade and with the roving habits of the Indians, who thus became dependent on the company for support. Eventually, the suspicious "higher-ups" of the company forced his resignation as Chief Factor, and then the Americans would have none of him on account of his

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***McLoughlin and Old Oregon.* By EVA EMERY DYE. Doubleday, Page & Co., New York. Pages, 381. Price, $1.75.

former position with the hated "Hudson Bay"! He was even deprived of the land he had acquired, and died in Oregon City discredited and unhonored. Long after his death a repentant people hailed him as "The Father of Oregon."

Both the dramatic style and the subject-matter of this volume hold the reader's interest throughout. H. M. LE CONTE

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GUIDE TO GIANT FOREST* This will prove a most useful little volume to all those who visit Sequoia National Park, whether on the first visit or after having already made several visits. As its name implies, it is frankly a guide-book. It is filled with just the information needed to assist one in making the numerous attractive trips in and about Giant Forest or to more remote points in and about Sequoia National Park. A section is devoted to each of the trips, and in each is included a table of distances and walking-time, as well as descriptions of all points of interest. A detailed map of Giant Forest and a trail map of Sequoia National Park will be found to be useful supplements to the more detailed map of the park published by the U. S. Geological Survey. Very brief chapters are devoted to the history of the region and to the wild animals, birds, trees, fishing, and wild flowers. W. L. H.

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WESTWARD HOBOES† Mrs. Winifred Dixon has done a piece of work in her *Westward Hoboes* that was worth doing, and it is a pleasure to pronounce it well done. The narrative and the illustrations combine to make a delightful handbook on what to see and how to see it in the little-known Southwest. Nor must the thoroughly satisfactory map be omitted. No one can fail to have perceived what a difference maps make in the study of history or geography. Hendrik Van Loon, in his *Story of Mankind,* and M. B. Synge, in *A Book of Discovery,* understood this, placing elephants where lesser men set down the names of towns, and savages or cannibals where tribal names might have made no impression at all. So Miss Thaxter (the "Toby" of the adventures) has the good sense to represent bad roads in Texas by an automobile sunk to the hubs in mud, to indicate danger by bandits, and, in short, to make her map as vivid as her companion's story makes her.

The book presents really valuable information to guide the motorist through the wonders which are to be seen along the route taken by these "adventuresome females." They traversed Texas, New Mexico, Arizona, bits of Utah, Colorado, Montana, Minnesota, and so home. Their adventures are wittily told, and undoubtedly some of their tales will become classics of the road. Beginning with the judge who said that he would take the fact that they were strangers in Texas into consideration, and who thereupon fined them far in excess of the native sinner, to the last incident, where after a night spent through inhospitality out in the rain-soaked streets they wake to find them-

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***Guide to Giant Forest.* By ANSEL F. HALL. Published by the Author, Yosemite. Pages, 127. Price, 50 cents.

†*Westward Hoboes.* By WINIFRED HAWKRIDGE DIXON. Photographs by Katherine Thaxter and Rollin Lester Dixon. Charles Scribner's Sons, New York. Price, $4.00.

selves under a banner inscribed "Welcome to Orland," the good humor of the narrative never flags, nor, in consequence, the zest of the reader.

But it is not only the ridicule, gentle though it always is, that stays in one's memory. The chance-met inhabitant or passer-by is portrayed with delicate touches that give color and life to the book. The lightness of touch sometimes conceals the real courage and endurance they were called upon to display on several side-trips, where, abandoning the automobile, they took to horses and pack-trains. The trip to the Havasupai Cañon (delicious name!) and to the Rainbow Bridge will fill the most hardened easy-chair traveler with a longing to be up and out, facing as cheerfully and merrily roughness and danger for the sake of the beauties alluringly set forth. LAURA JACKSON

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DOWN THE COLUMBIA* Lewis R. Freeman has traveled extensively upon all of the more important rivers of the world, and in his *Down the Columbia,* he gives a most entertaining and fascinating account of what, to him at least, is the "Achilles of rivers." In more ways than one, there is not a "dry" spot in the entire book, and to the lover of rough rivers and rugged mountains the book should make a strong appeal.

Mr. Freeman and several companions start at the very source of the Columbia, at the Lake of the Hanging Glaciers, lying between the Canadian Rockies and the Selkirks in British Columbia. They thence make their way down the river, passing through many of the most beautiful spots of southwestern Canada and northwestern United States. Thus far Mr. Freeman is the only one to complete the journey to the mouth of the river, his companions upon the trip in question having dropped off at various places along the route, and, so far as it is known, he is the first man to run the Columbia from source to mouth.

One of the important members of the expedition was a motion-picture photographer sent by Mr. C. L. Chester; the settings for scenario work at various points greatly enrich the narrative. It is surprising how a short description of a "movie set-up" helps to bring out the details of the changing landscape.

The book is profusely illustrated with some unusual pictures which give a touch here and there hardly obtainable in any other way. E. V. TENNEY

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THE CONSERVATION OF WILD LIFE IN CANADA† In the northern part of our continent lies the only considerable sanctuary for wild life that exists in North America today. The retarded settlement of the Canadian wilderness has preserved its abundant animal and bird life in a period when we face almost complete extinction of many species in the United States. It is the firm conviction of Dr. Hewitt that the younger country may profit by the mistakes of the elder; that it is not yet too late to educate the public to the sentiment that "civilization in its true sense signifies the elimina-

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**Down the Columbia.* By LEWIS R. FREEMAN. Dodd, Mead & Co., New York. Illustrated. Pages, 383. Price, $3.50.

†*The Conservation of Wild Life in Canada.* By O. GORDON HEWITT, D. Sc. Charles Scribner's Sons, New York. 1921. Pages, 344. Price, $2.50.

tion of the spirit of barbarism and the introduction of an enlightened attitude" toward animal as well as human life. The book discusses the factors responsible for vanishing wild life elsewhere, the present status of Canada, and the best means of securing sympathy and public support in the steps that must be taken to conserve wild life. Abundant notes on the habits and range of wild animals strengthen the value and interest of this remarkably worth-while and readable book. Dr. Hewitt points out the scientific interest of the fact that while some species of the Canadian fauna are unique others are closely allied to European species. An interesting footnote gives a glimpse of the havoc wrought in animal life by the World War. In Lithuania and the Caucasus the European bison is now reported nearly extinct owing to the breaking down of restrictions that formerly safeguarded them—contrary to the experience of the reviewer in the Ardennes, France, where the wild boar had greatly increased, according to the peasants, during the period when men could not cease killing one another long enough to hunt down the beasts. M. R. P.

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Watched by Wild Animals*

Waiting in the Wilderness†

These two new volumes from the hand of Mr. Enos A. Mills, the well-known nature guide, live up to the reputation he has already established. The volume which bears the name *Watched by Wild Animals* recalls the philosophy of a watchman at the University of California. He was lamenting the fact that one never saw ripe fruit upon the campus fruit-trees, no matter how carefully they were watched.

"You can't stop boys from getting the fruit," he said. "There's only one of you and there's a raft of them."

Mr. Mills' experience has confirmed this profound truth. As he traversed wild country, in his wake followed the animals he had come out to study. The signs which his competent woodman's eye could detect told him that for every wild animal he could see a "raft of them" were watching him. It cannot be denied, however, that Mr. Mills made the most of his opportunities. He brings home the spoils of knowledge in abundance. "The Rocky Mountain Goat," "Mr. and Mrs. Skunk," "The Persistent Beaver," and many others are forced to contribute to the amusement of the fireside hunter.

In addition to the usual tales about the doings of wild animals, the second book, *Waiting in the Wilderness,* opens a somewhat newer field. The chapter entitled "Pirates in the Mountains" is a bright and entertaining account of the remarkable feats of erosion which rivers are capable of, and "Hunting for Animals of Past Ages" ought to turn everyone who reads it into a student of paleontology. It is only fair, however, to say a word of warning in this connection. Mr. Mills' books, like those of others who write thus entertainingly of nature, are apt to leave a false impression on the outsider and to heighten our national get-knowledge-quick disease. To achieve a real understanding of na-

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**Watched by Wild Animals.* By Enos A. Mills. Doubleday, Page & Co., New York. Price, $2.50.

†*Waiting in the Wilderness.* By Enos A. Mills. Doubleday, Page & Co., New York. Price, $2.50.

ture's mysteries is not all "beer and skittles." It is delightful for the idle reader that a man of Mr. Mills' ability should be willing to condense into two hundred and forty-one pages incidents of almost dramatic liveliness, but those who have pored over the records in the rocks and elsewhere know that to get the thrills for those pages there must be long days of hard and painful toil and thought. LAURA JACKSON

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THE DRAMA OF THE FORESTS* This book by Arthur Heming is a description and narrative of the northern woods—a description gleaned from a thirty-three-year experience in them—a narrative weaving into one whole the most interesting facts of that experience. Many of these travels were taken with the Indians, of whom, as a race and individually, the author has the highest regard. Living so closely with them, he might be said to have gotten the Indian point of view.

The story is rather loosely woven together, and the literary style sometimes suffers by the feeling displayed and the language used in rebuking what the author considers the shameless dealing with fact of the ordinary author and scenario-writer. The point of view is, however, original, the descriptions good, and the purpose sincere. The keynote of the book is perhaps best given in the words of the author in the introduction: "Thus it has taken me thirty-three years to gather the information this volume contains, and my only hope in writing it is that perhaps others may have had the same day-dream, and that in this book they may find a reliable and satisfactory answer to all their wonderings." DAISYMAY HUBER

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THE PLAINS AND THE ROCKIES: A BIBLIOGRAPHY† Every collector of Californiana or books containing original narratives of western travel and adventure will be grateful to Mr. Henry R. Wagner for this very unusual bibliography. To say that there are descriptions of three hundred and forty-nine book-titles tells but a small part of the story. Mr. Wagner knows the contents of these books and their relation to other contemporary books in the same field. He makes illuminating comments upon the authors, corrects long-standing mistakes, examines critically their sources of information, and provides a valuable basis for historical research. In short, all historians of the pioneer life and earliest explorations of the West will come to regard Mr. Wagner's bibliography as indispensable. One cannot but stand in admiration, also, of his skill and industry in collecting so many rare and valuable books, and it is to be hoped that they may ultimately find a permanent abiding-place in California. The book bears the imprint of John Howell of San Francisco, and is beautifully printed, with wide margins, in royal octavo.

W. F. B.

**The Drama of the Forests.* By ARTHUR HEMING. Doubleday, Page & Co., New York. Price, $5.00 net.

†*The Plains and the Rockies:* A Bibliography of Original Narratives of Travel and Adventure, 1800-1865. By HENRY R. WAGNER. John Howell, San Francisco. 1921. Pages, 193. Price, $7.50.

HANDBOOK OF YOSEMITE NATIONAL PARK*

To those who have not yet opened this little volume the reviewer feels that he should utter a friendly warning. Herein lovers of the Incomparable Valley will find little to enhance the complaisant delight of those who feel "they know their Yosemite." On the contrary, this book will leave the majority of its readers with the feeling that former trips to Yosemite have been rather futile, and (if one may take Omar for precedent and compare Creation to a circus) they will know that they have heretofore not only missed many of the most interesting side-shows, but a large part of the main performance as well.

Assuming that you are familiar with the discovery and history of the region as set forth by Professor Kuykendall in the opening chapter, are you also familiar with the facts of Professor Kroeber's account of the Yosemite Indians in chapter two? Or, if you have studied the geology of the park and can afford to skip Professor Lawson's chapter on this subject, how about your knowledge of the life-zones of the Yosemite region? Do you know at what level the California laurel gives way to the Jeffrey pine and from which of the six zones the Sierra Nevada Rosy Finch dares never to wander? The birds, perhaps, you know. Do you know the insects? The trout, perhaps; but the amphibians, what of them? And if you know all that Ray Bailey knows of camping in Yosemite, do you also claim Mr. Wallace Curtis's knowledge of motoring there? Are you aware that your photograph of Bridal Veil is poor because it was taken at ten o'clock instead of at one, and your filming at the Happy Isles was not so good because it was taken at one instead of at ten? To vaunt the feeling of superiority which comes to one who has read this book may be immodest, but it is not unjustifiable.

Fortunately the binding of the book is not expensive, for the ardent fisherman will probably resort to the radical operation of removing its appendix, which contains, among other valuable data, a list of over two hundred lakes and streams, with the species of trout they contain, the year of their planting, and a notation as to whether the fishing in each is excellent, good, fair, poor, or *nil*. C. N. H.

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THE FRIENDLY ARCTIC†

The author warns the reader that he may skip the first two chapters of this book, as the narrative begins with chapter three. Yet these first two chapters, to the average reader, will prove of unparalleled interest as a monograph on the polar region. In them, one by one, are demolished almost all previous conceptions of that *terra incognita*. In the first place, it is not cold—that is, not as cold as Montana. In the second place, it is not buried in eternal snow. "Sverdrup estimates the total annual snowfall of Ellesmere Island, the most northerly island yet found in the world, at about one-tenth of the Weather Bureau estimate of the annual snowfall of St. Louis, Missouri. Most of what little snow falls in the far north is soon swept by the wind into gullies and into the lee of the hills, so that some seventy-five to ninety per cent of the surface of Arctic land is comparatively free from snow at all seasons. What we mean by 'comparatively free' is that a pebble the size of a plum lying on the ground would have more than an even chance of being partly visible above the snow." Nor are the lands of the Arctic "barren ground." Northern Greenland, one of the coldest regions of the north, has ample pasturage for the musk oxen which graze "in green and flowered meadows among the song of birds and the hum of bees." And those who have called the Arctic land "lifeless" have not taken into account the "caribou in herds of tens of thousands and sometimes hundreds of thousands to a single band. . . . There are the polar foxes, both white and blue, that feed in summer on the unbelievable swarms of lemmings that often form the food of hundreds of thousands of owls and hawks and gulls."

**Handbook of Yosemite National Park:* A Compendium of Articles on the Yosemite Region by the Leading Scientific Authorities. Compiled and edited by ANSEL F. HALL, U. S. National Park Service. Illustrated. G. P. Putnam's Sons, New York and London. 1921.

†*The Friendly Arctic: The Story of Five Years in Polar Regions.* By VILHJALMUR STEFANSSON. Illustrated. The Macmillan Company. 1921. Price, $6.00.

The reader, having accustomed himself to a new mental attitude, is taken in subsequent chapters on one of the remarkable journeys of historic time. It extends through five years, each with its interesting episodes, and through all and commenting on all, goes Vilhjalmur Stefansson, whose practical philosophy and humor are comparable with Poor Richard's. Perhaps the unusual literary quality of this book will astonish its readers as much as any of the deeds which it records. Yet perhaps this should not be so surprising, as expeditions such as this are the flowering of a high civilization, and those who undertake exploration, mountain-climbing, and the hunting of big game are likely to come from the cultured class. Indeed, Stefansson declares that men whom we speak of as gently bred endure many hardships with the least difficulty.

The outstanding contribution of Stefansson to Arctic exploration is doubtless his proof that explorers in the Arctic can live upon the country and need not be burdened with the stores of supplies which were theretofore thought necessary.

In conclusion he says: "Those who go to China and Turkey are less impressed with the few strange things they see than with the commonplaceness of the general average. It is not only ignorance, but also romance, that retreats before the advance of knowledge. . . . It is chiefly our unwillingness to change our minds which prevents the north from changing into a country to be used and lived in just like the rest of the world."

So ends this serene and yet absorbing narrative, which is also the autobiography of one who has the heart of a Viking, the cool brain of a modern scientist, and the nonchalance of a hero. His kind, long may they flourish!

C. N. H.

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TRAILMAKERS OF THE NORTHWEST* This is a lively and interesting account of the trappers and explorers whose exploits opened up the great northern section of our country. Hudson, Mackenzie, and Sir John Franklin are all given their due place, and their well-known adventures are

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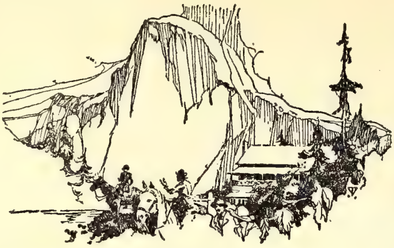
***Trailmakers of the Northwest.* By PAUL LELAND HAWORTH. Harcourt, Brace & Co. Illustrated. Price, $2.50 net.

enlivened by many personal touches and humorous side-lights. Haworth's account of Amundsen's making the famous Northwest Passage is of special interest to those of us who have seen the sturdy little "Gjoa" resting quietly at the beach entrance to Golden Gate Park in San Francisco. Her battered wooden frame gives clear evidence of the difficulties of that eventful Arctic voyage and supplies an added zest to Haworth's full and detailed account of the modest Norwegian's success in an undertaking that explorers had dreamed of for three centuries.

F. E. Atkinson



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